



The Outsourcing-to-Insourcing Relocation Shift: A Response of U.S. Manufacturers to  
the Outsourcing Paradigm

DISSERTATION

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AFIT-ENS-DS-13-J-18

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DISSERTATION

Presented to the Faculty

Department of Operational Sciences

Graduate School of Engineering and Management

Air Force Institute of Technology

Air University

Air Education and Training Command

In Partial Fulfillment of the Requirements for the  
Degree of Doctor of Philosophy in Logistics

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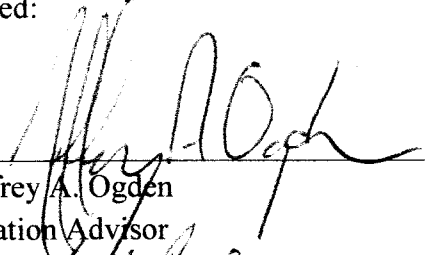
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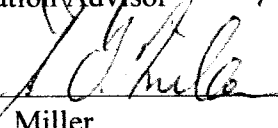
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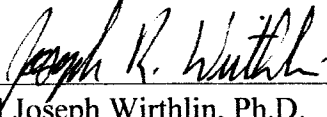
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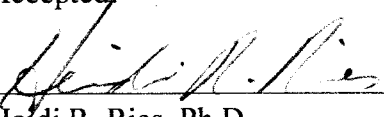
  
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## **Abstract**

Outsourcing has been utilized as a corporate strategy by U.S. manufacturers for over three decades to minimize manufacturing and production costs, focus on core competencies and achieve sustained competitive advantages in the global market. In recent years, manufacturers have begun evaluating nearshoring, reshoring and insourcing strategies as near-term responses to trigger events such as increased labor costs and decreased product quality. The United States Air Force also established outsourcing as its primary strategy for achieving cost-saving objectives associated with the design, engineering, manufacturing, production and sustainment of its fourth, fifth and sixth generation weapon systems. In order to decrease weapon system costs and consistently achieve congressionally mandated core and 50/50 requirements, the United States Air Force is evaluating opportunities to bring outsourced workload into the depot infrastructure. This research applies grounded theory and case study methodologies to examine the antecedents and barriers of the U.S. manufacturing outsourcing-to-insourcing relocation shift. A structured framework is presented to assist the United States Air Force as a guide for evaluating insourcing opportunities. The framework addresses contract duration, access to critical information, and the factors influencing the insourcing decision.

### **Acknowledgements**

I would like to express my sincere gratitude to my dissertation committee chair, Dr. Jeffrey A. Ogden, for his support throughout my program. Under his leadership, I have been afforded several opportunities to present research papers at leading logistics and supply chain conferences such as the 2010-2013 North American Research Symposiums on Purchasing and Supply Management, and participate in the 2011 International Federation of Purchasing and Supply Management Summer School in Salzburg, Austria. I also extend my appreciation to Dr. J.O. Miller and Lt Col Joseph R. Wirthlin, Ph.D., for their thoughtful insights and contributions to my research. Each committee member added significant value to this research and my AFIT experience.

It is important to recognize the members of the Senior Executive Service who have provided access to information and financial support for this dissertation research:

- Mr. M. Scott Reynolds, Deputy Assistant Secretary of the Air Force for Logistics
- Ms. Lorna B. Estep, Deputy Director of Logistics, Air Force Materiel Command
- Mr. Ross E. Marshall, Executive Director, Air Force Sustainment Center
- Mr. Gilbert J. Montoya, Director of Logistics, Air Force Sustainment Center

Lastly, I would like to thank the Department of Operational Sciences staff and my fellow AFIT students for their encouragement and support throughout this demanding three-year process. I wish each of you continued success in the years ahead.

## Table of Contents

	Page
Abstract	iv
Acknowledgements	v
List of Figures	ix
List of Tables	x
1 Introduction	1
1.1 General Discussion	1
1.2 Motivation	3
1.3 Research Contributions	7
1.4 Organization of Dissertation	8
2 Research Methodology	9
2.1 Methodological Approach	9
2.2 Qualitative Research	9
2.3 Sample Size	10
2.4 Sampling Strategy	10
2.5 Theoretical Method	11
2.6 Data Collection and Analysis	12
3 Academic Paper #1 – Contract Duration: A Barrier or Bridge To Supplier-side Investment in Public/Private Partnerships	15
3.1 Abstract	15
3.2 Introduction	16
3.2.1 The Long-term Contract	18
3.2.2 Risk Attitude	19
3.3 Literature Review and Proposition Development	20
3.3.1 Perception of Partnership Motive	21
3.3.2 Perception of Relationship Trust	23
3.3.3 Performance Objectives	25
3.3.4 Financial Objectives	26
3.3.5 Buyer-Supplier Risk Position and Contract Duration	27
3.3.6 Contract Duration and Supplier-side Investment	28
3.4 Research Approach	30
3.5 Findings	32
3.5.1 Evaluation of Propositions 1a-1b: Perception of Partnership Motive	33
3.5.2 Evaluation of Propositions 2a-2b: Perception of Relationship Trust	35

3.5.3	Evaluation of Propositions 3a-3b: Performance Objectives	38
3.5.4	Evaluation of Propositions 4a-4b: Financial Objectives	41
3.5.5	Evaluation of Proposition 5: Buyer-Supplier Risk Position and Contract Duration	42
3.5.6	Evaluation of Proposition 6: Contract Duration and Supplier-side Investment	44
3.6	Conclusions	46
3.7	Implications for Public/Private Partnerships	48
3.8	Future Research	52
4	Academic Paper #2 – Buyer Beware: Nearshoring, Reshoring and Insourcing—Moving Beyond the Total Cost of Ownership Discussion	53
4.1	The Location Specific Manufacturing Shift	53
4.2	The Decision Maker’s Challenge	55
4.3	Reacting to Trigger Events	58
4.4	Critical Information Flows	59
4.5	How You Got In May Determine How You Get Out	60
4.6	Process Control and Information Access	61
4.6.1	Custom Manufacturing	62
4.6.2	Customization of Standardized Products	65
4.6.3	Standardized Products	67
4.7	Supply Chain Structure	69
4.8	Managing Your Way To Information Access	72
4.8.1	The Handshake	72
4.8.2	The Stick	72
4.8.3	The By-pass	73
4.8.4	The Benchmark	73
4.9	More Than The Bottom Line	74
5	Academic Paper #3—An Empirical Investigation of the Manufacturing Outsourcing-to-Insourcing Antecedents	75
5.1	Abstract	75
5.2	Introduction	76
5.3	A Review of the Literature	78
5.4	Theoretical Grounding	92
5.4.1	Transaction Cost Economics	93
5.4.2	Resource-based View	95
5.4.3	Theoretical Overlap, Divergence and Value Conflict	97
5.4.4	Overarching Research Questions	98
5.5	Research Method	98



5.5.1	Sample Size	99
5.5.2	Sampling Strategy	99
5.5.3	Data Collection	100
5.6	Analysis and Results: Firm-level Interviews	103
5.6.1	Discussion of Firm-level Interview Results	104
5.7	Analysis and Results: Specific Insourcing Cases	121
5.7.1	Discussion of Case Study Results	122
5.8	Conclusions	123
5.9	Managerial Implications and Propositions	125
5.9.1	Proposition One (Tactical Influences)	126
5.9.2	Proposition Two (Strategic Influences)	126
5.9.3	Proposition Three (Enabling Influences)	127
5.10	Research Limitations and Future Direction	127
6	Research Summary	129
6.1	Major Research Findings	129
6.1.1	Chapter 3, Academic Paper #1 – Contract Duration: A Barrier or Bridge to Supplier-side Innovative Investment in Public/Private Partnerships	129
6.1.2	Chapter 4, Academic Paper #2 – Buyer Beware: Nearshoring, Reshoring and Insourcing—Moving Beyond the Total Cost of Ownership Discussion	133
6.1.3	Chapter 5, Academic Paper #3 – An Empirical Investigation of the Manufacturing Outsourcing-to- Insourcing Antecedents	135
6.2	Implications for the United States Air Force	137
	Bibliography	139
	Appendix A. Semi-structured Interview Guide	164
	Appendix B. Case Study Worksheet	166
	Appendix C. Curriculum Vita	167
	Appendix D. Publication of Research	170

## **List of Figures**

<b>Figure</b>	<b>Page</b>
Figure 1 – Outsourcing research and future insights	1
Figure 2 – The Double Helix Curve: Supply Chain Structure Oscillations	3
Figure 3 – USAF Sustainment Footprint	4
Figure 4 – Research Data Collection and Analysis Approach	13
Figure 5 – Risk Position and Contract Duration	28
Figure 6 – Relationships and Linkages of Research Propositions	30
Figure 7 – Regenerating Contract Approach	51
Figure 8 – The Outsourcing-to-Insourcing Shift	53
Figure 9 – Cost-based Decision Making Approach	57
Figure 10 – Financial and Process Complexity Factors	60
Figure 11 – Engineering Design and Manufacturing Complexity Factors	68
Figure 12 – Upstream Supply Chain Structure Complexity	71
Figure 13 – Research Data Collection and Analysis Approach	103
Figure 14 – Tactical, Strategic and Enabling Influences	107
Figure 15 – Relocation Evaluation Framework	138

## **List of Tables**

<b>Table</b>	<b>Page</b>
Table 1 – Why Firms Outsource	6
Table 2 – Noteworthy Articles Addressing Supply Chain Relationships, Partnerships and Alliances	17
Table 3 – Buying Agencies and Suppliers	31
Table 4 – Summary of Influential Factors	32
Table 5 – Proposition Summary of Findings	46
Table 6 – The Focal Firm-Outsourced Manufacturer Relationship	62
Table 7 – Influencing the Manufacturer’s Supply Chain Structure	70
Table 8 – Influential Factors (Factors 1-13)	79
Table 9 – Influential Factors (Factors 14-23)	80
Table 10 – Research Participants	101
Table 11 – Interview Question #4, Firm-level Summary Results	104
Table 12 – Specific Case Summaries	122
Table 13 – Examination of Influences	123

# THE OUTSOURCING-TO-INSOURCING RELOCATION SHIFT: A RESPONSE OF U.S. MANUFACTURERS TO THE OUTSOURCING PARADIGM

## 1.0 Introduction

### 1.1 General Discussion

For nearly 30 years there has been an escalated focus within industry and academia on understanding the outsourcing phenomenon (Hatonen and Eriksson, 2009). Outsourcing, defined as *the transfer of activities and processes previously conducted internally to an external party* (Ellram and Billington, 2001) has significantly redefined the horizontal boundaries of the firm and, in-turn, the nature of the firm in the market place. Figure 1 taken from Hatonen and Eriksson (2009) provides a summary look at the evolution of outsourcing, expecting that outsourcing will continue to evolve as a core business strategy well into the future.

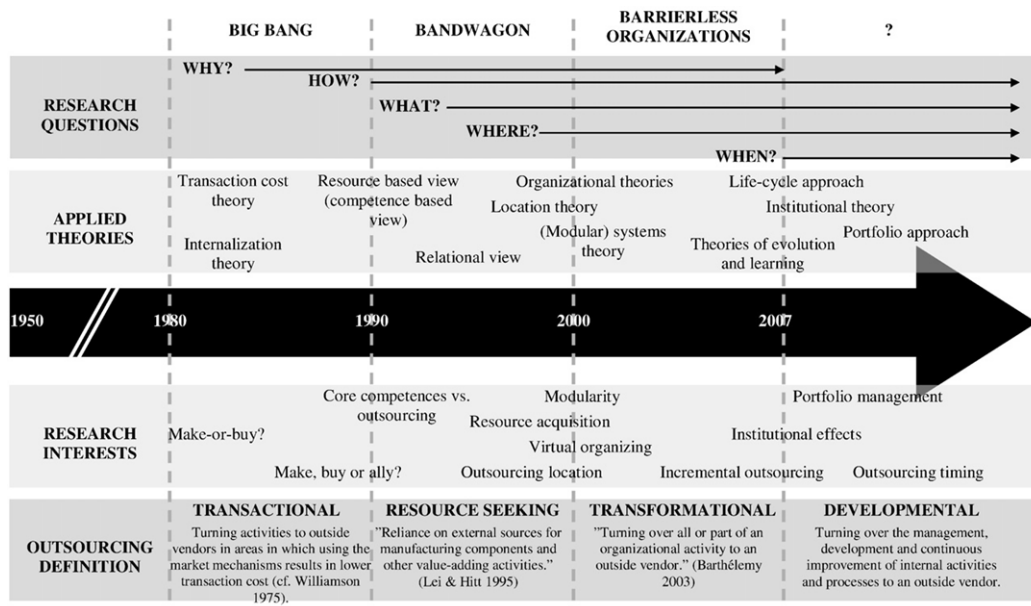


Figure 1 - Outsourcing research and future insights (Hatonen and Eriksson, 2009)

The lower portion of Figure 1 highlights the transition of focal firm activities to outsource service providers. Outsourcing has been increasingly considered as a critical element of organizational strategy (Holcomb and Hitt, 2007; Antelo and Bru, 2010). Over time, the degree to which firms have relied on outsourcing to perform functions which directly and indirectly affect overall firm performance has significantly increased (Kroes and Ghosh, 2010).

Although outsourcing has been a long-standing, evolutionary strategy there is increasing awareness that the outsourcing cycle may be beginning to decline. Research completed by Mol *et al.*, (2005), Gadde and Jonsson (2007), Fredriksson and Jonsson (2009), and Kinkel and Maloca (2009) provide insight into performance consequences and risks of outsourcing. Additionally, Rangan (2000) points out that firms have varying abilities to properly identify and evaluate foreign suppliers therefore there is potential that the perceived value of outsourcing, particularly sourcing globally, may not achieve the firm's desired objectives. This suggests that firms may begin reversing the outsourcing cycle, creating a monumental outsourcing-to-insourcing manufacturing relocation shift.

This expected relocation shift is consistent with the work of Fine (2000). His research centers on the speed at which supply chain evolution occurs in industry. He concluded that there are forces at work within both horizontally and vertically integrated industries which create pressure for the industry to evaluate its supply chain design—vertically integrated supply chains face internal and external pressures to become more horizontal or disintegrated and horizontally integrated supply chains are pushed toward vertical integration. Fine illustrates this push pressure process as identified in Figure 2

below and summarizes “we learn another important lesson about the evolution of supply chain structures: They should not be expected to be stable.”

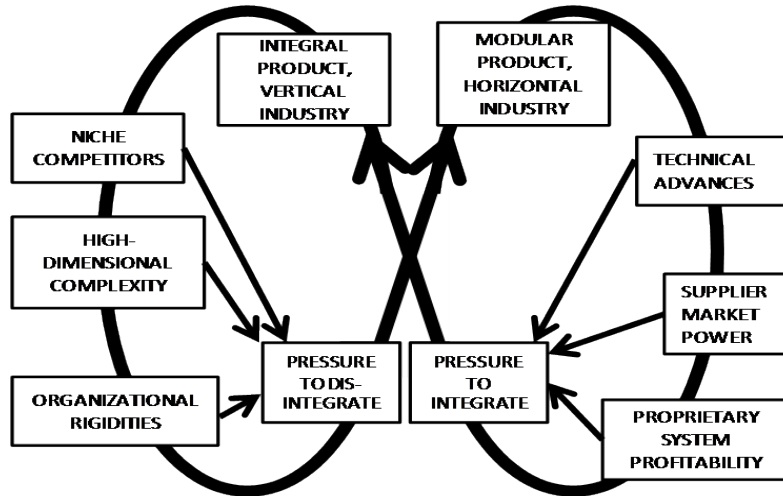


Figure 2 - The Double Helix Curve: Supply Chain Structure Oscillations (Fine, 2000)

Fine’s model in Figure 2 above illustrates the Pressure To Disintegrate and Pressure To Integrate supply chain structures from intra- and inter-firm forces. Understanding this evolutionary cycle of business served as the starting point for gaining insight into the dynamic cycles of sourcing strategy in two-dimensional planes. While much has been written about the left side of Fine’s model in terms of *outsourcing*, there is very little scholarly research addressing the monumental cycle shift which occurs from the disintegrated side to integrated side—the outsourcing-to-insourcing relocation shift.

## 1.2 Motivation

The eventuality of this dynamic shift has also become an increasingly important subject of significant interest to the United States Air Force (USAF), the Department of Defense (DoD) and our Nation. From the perspective of the USAF, there are currently

23 4<sup>th</sup>-, 5<sup>th</sup>-, and now 6<sup>th</sup>-generation weapon systems (e.g., C-17, F-22, F-35 respectively) which are predominantly sustained and supported through an outsourcing strategy referred to as the Contractor Supported Weapon Systems (CSWS) portfolio. As seen in Figure 3 below, new weapon systems entering the inventory which have a predominant outsourced sustainment and support strategy in-place will put the USAF in a position where it may no longer be able to meet its mandated contribution to the overall DoD “50/50” mandate. This mandate states that “not more than 50 percent of the funds made available in a fiscal year to a military department or a Defense Agency for depot-level maintenance and repair workload may be used to contract for the performance by non-Federal Government personnel of such workload for the military department or the Defense Agency” (USC Title 10, Section 2466). In other words, retiring the legacy weapon systems without insourcing the sustainment and support of key CSWS programs may leave the USAF in violation of U.S. Code.

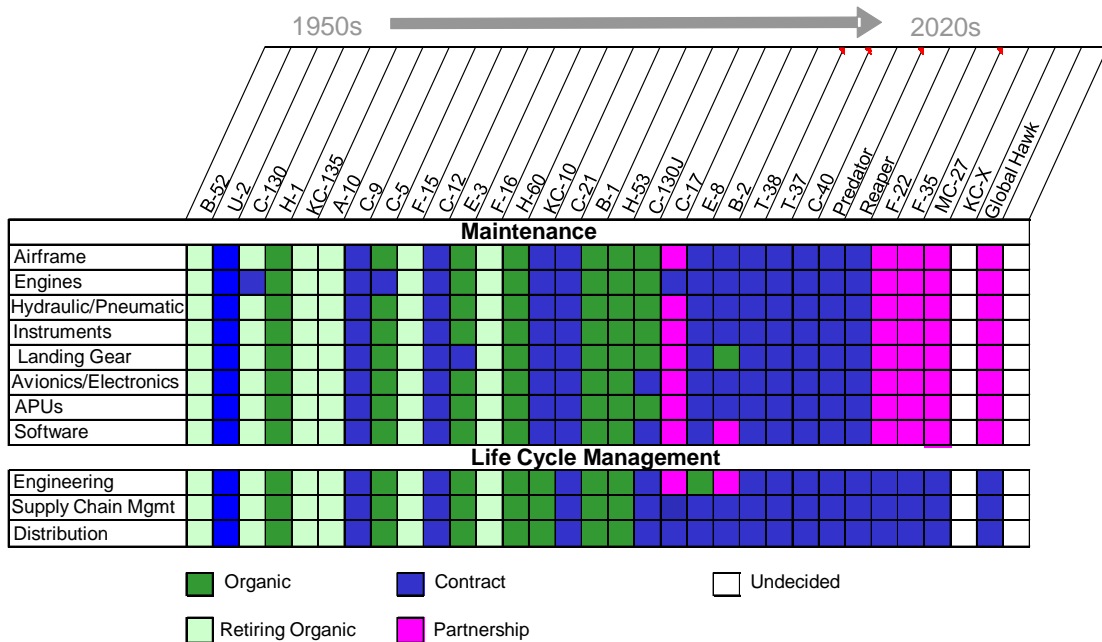


Figure 3 – USAF Sustainment Footprint (Source: Mr Reynolds, SAF/IEL)

The DoD is also “...required, by law, to maintain a core logistics capability that is government owned and government operated to meet contingency and other emergency requirements” (GAO, May 2009). This is often referred to as the Department’s ‘core’ responsibilities which Office of Management and Budget (OMB) Circular A-76 specifies as an agencies responsibility to “...identify all activities performed by government personnel as either commercial or inherently governmental...” and to “...perform inherently governmental activities with government personnel” (OMB, 2003). Narrowly defined, the GAO report and OMB A-76 require the DoD to identify, develop and retain “core” logistics capabilities. However, as the CSWS portfolio programs have entered the USAF inventory, the USAF has relinquished development of its core capability to the original equipment manufacturer (OEM) and/or their many subcontractors with measurable effects on the overall USAF and DoD inherently governmental core capabilities.

The issue of insourcing is not unique to the DoD and USAF. A 2010 report from the Congressional Research Service (CRS) titled, “Globalized Supply Chains and U.S. Policy,” identifies many public policy concerns associated with the globalization (i.e., outsourcing) of critical U.S. company supply chain functions and the associated impacts to taxation, trade and investment policy, labor and health care costs, infrastructure and transportation, education and training, and much more. The CRS identifies the globalization of supply chains as a new paradigm, suggesting “...the traditional paradigm for policy was that the American economy consisted of U.S. businesses that operated primarily in the domestic market, hired U.S. workers, and sold to U.S. consumers but some production was either imported or exported. International trade took place between



countries according to each nation’s competitive and comparative advantage” however, “...the world has now changed. Like a child’s neural network, the global economy is constantly organizing and reorganizing itself with new linkages, supply networks, manufacturing chains, and marketing channels that arise in response to market forces and government policies” (CRS, 2010). Furthermore, the CRS report suggests that a new policy paradigm must address these ever-evolving and increasingly complex international supply chains while recognizing that public policy has differing effects along the segmented production, sustainment and support chains.

There has been a significant number of academic journal articles published addressing outsourcing but none addressing insourcing of sustainment and/or logistics support functions (Note: there are a very few which address insourcing of IT capabilities). Table 1 below provides insight into some of the most significant outsourcing contributions categorized by research focus area—why firms outsource.

**Table 1 - Why Firms Outsource (Created from Mello *et al.*, 2008)**

<b>Research Focus</b>	<b>Author(s)</b>
<b>Cost reduction and service improvement</b>	Boyson <i>et al.</i> , 1999; Lieb and Bentz, 2005; Maltz, 1994; Maltz and Ellram, 1997; Rao and Young, 1994; Sink and Langley, 1997
<b>Focus on core competencies</b>	Leahy, Murphy, and Poist, 1995; Razzaque and Sheng, 1998; Roa and Young, 1994; van Damme and van Amstel, 1996
<b>Improve productivity</b>	Leahy, Murphy, and Poist, 1995
<b>Upgrade information technology</b>	Leahy, Murphy, and Poist, 1995; Sink and Langley, 1997
<b>Leverage supply chain management</b>	Lieb and Randall, 1996; Rao and Young, 1994
<b>Regulatory change</b>	Sink and Langley, 1997
<b>Need for expertise</b>	Razzaque and Sheng, 1998; Sink and Langley, 1997; van Damme and van Amstel, 1996
<b>Globalization of business</b>	Razzaque and Sheng, 1998
<b>Just-in-time complexities</b>	Razzaque and Sheng, 1998
<b>Rapid growth</b>	van Damme and van Amstel, 1996

While outsourcing has been a primary topic of academic research and industry focus for over three decades, there is an impending “next evolution” which remains

mostly undefined. This dissertation research on the outsourcing-to-insourcing relocation shift begins to fill this gap in the logistics and supply chain literature and provides academics, as well as practitioners, approaches for addressing this monumental change in sourcing strategy. The findings of this research suggest that the post-outsourcing paradigm will be followed by a strategic change in focus away from outsourcing as a corporate strategy. This dynamic shift will most likely alter firm-level strategic business objectives, purchasing strategies, and inter-firm relationships. This research identifies many of the multi-dimensional influential factors which have facilitated this dynamic shift and provides a new context for the advancement of strategic sourcing and purchasing theory.

### **1.3 Research Contributions**

This research makes three specific contributions to the logistics and supply chain management body of knowledge:

- Identification and analysis of the linkage between buyer-supplier risk position, contract duration and supplier-side innovative investment needed to improve supply chain performance
- Identification of the financial, manufacturing and supply chain complexity factor information elements required by decision makers prior to evaluating manufacturing relocation opportunities

- Identification and classification of the drivers or antecedents which manufacturers have identified as primary factors leading to an outsourcing-to-insourcing manufacturing relocation decision

#### **1.4 Organization of Dissertation**

The remainder of this research encompasses six chapters. The second chapter addresses the overarching methodology applied throughout the course of the research. Chapter three is the academic paper submitted to the *Journal of Business Logistics* titled, “Contract Duration: A Barrier or Bridge to Supplier-side Investment in Public/Private Partnerships.” Chapter four is the academic paper prepared for submission to the *MIT Sloan Management Review* titled, “Buyer Beware—Nearshoring, Reshoring and Insourcing, Moving Beyond the Total Cost of Ownership Discussion.” Chapter five is the final draft of an academic paper to be submitted to the *Journal of Operations Management* titled, “An Empirical Investigation of the Manufacturing Outsourcing-to-Insourcing Antecedents.” Chapter six provides a summary of the research, including managerial implications and a high-level decision support framework for decision makers considering opportunities to relocate manufacturing workload. The framework ties together the major findings from Chapter 3 through Chapter 5.

## **2.0 Research Methodology**

### **2.1 Methodological Approach**

This chapter addresses the overarching research methodology applied throughout the research process. Chapters 3-6 each applies this overarching research methodology and, where appropriate, modifies the overarching research methodology as necessary to achieve the end-state research objective(s) for the specific academic paper.

### **2.2 Qualitative Research**

This research fills an apparent void in the academic literature addressing the influential factors (why?) which facilitated a manufacturer's decision to make a manufacturing relocation decision and the process applied (how?) to effect the implementation of the relocation decision. Qualitative research methods were selected to support this research since the primary focus was to address 'why' and 'how' questions concerning the outsourcing-to-insourcing relocation shift.

Hayes (2000) identified the need for "less hypothesis testing and more systematic observation to help managers deal with their actual problems." As the research centered on 'why' and 'how' questions concerning the outsourcing-to-insourcing relocation shift, Yin (2009) and Ellram (1996) suggests that qualitative, explanatory case study research is appropriate. This is in part due to the uniqueness of the contemporary event where there is little prior understanding of the phenomenon. Coughlin and Coghlan (2002) recommend use of qualitative research methods to develop models and theories to explain current phenomena (i.e., the outsourcing-to-insourcing shift).

### **2.3 Sample Size**

Pratt (2009) states, “unlike quantitative research ... there is no magic number of interviews or observations that should be conducted in a qualitative research project. What is ‘enough’ depends on the question a researcher seeks to answer.” Witt and Redding (2009) suggests qualitative research methods usually make a trade-off between sample size and depth of research detail. Eisenhardt (1989) suggests there is no ideal number of cases but 4-10 cases have worked well for most qualitative studies. Her rationale is that researchers using less than 4 cases will find it difficult to convince readers of sufficient empirical grounding while those dealing with more than 10 cases may find it difficult to “cope with the complexity and volume of data,” gathered. Ellram (1996) identifies the use of 6-10 cases for qualitative research as a sample size sufficiently large enough to properly evaluate a set of research propositions. This body of research was developed using 51 structured interviews completed with 24 different companies and/or agencies, and incorporates findings from 14 specific case studies used to examine various elements of the outsourcing-to-insourcing manufacturing relocation shift.

### **2.4 Sampling Strategy**

Eisenhardt (1989) states, “selection of cases is an important aspect of building theory from case studies...the concept of population is crucial, because the population defines the set of entities from which the research sample is to be drawn. Also, selection of an appropriate population controls extraneous variation and helps to define the limits for generalizing the findings.” She further adds, “while cases may be chosen randomly,

random selection is neither necessary, nor preferable.” From these insights, this research applied the following sampling strategy with unit of analysis being the individual firm:

- Research participants and cases were selected within the manufacturing and manufacturing material support industries for analysis as a means of controlling for variation across industries

## **2.5 Theoretical Method**

Auerbach and Silverstein (2003) suggest Grounded Theory Methods (GTM) be used when:

- research and theory are at their early, formative stage and not enough is known on the phenomenon to state hypothesis prior to the investigation; and
- the major research interest lies in the identification and categorization of elements and the exploration of their connections.

GTM affords the researcher the opportunity to “ground” the information or data discovered through the research process (e.g., interviews, review of archival records, surveys, etc.) through a holistic gathering and comparison of information or data to better understand complex phenomena (Glaser, 1978). This is best done through an “iterative, process-oriented, analytic procedure using the two key operations: constant comparison and theoretical sampling” (Binder and Edwards, 2010).

## **2.6 Data Collection and Analysis**

In addition to issue-specific literature reviews, primary research information was gathered using a pre-interview questionnaire and the long interview method developed by McCracken (1988). Ogden (2003) states, “the unit of analysis has a direct impact on the type of information the researcher will gather and from whom they will gather it.” Since the selected unit of analysis was the firm, the preference was to conduct in-person, face-to-face interviews. There were, however, specific times in which the interviewee was only available by telephone. Participants were selected who had familiarity with the relocation decision approach, implementation processes and/or outcomes. This interview approach allowed for feedback and readdress of conversational points, providing clarification where needed and additional detail which may not have been possible through other interview / survey means. Where allowed, interviews were recorded as a means of increasing precision and validity of the findings (Patton, 1990).

Using GTM provided a structured approach where by an iterative, multi-phase collect-analyze-compare process was applied. Binder and Edwards (2010) state that in using this approach, “the researcher moves back and forth between data collection, coding and interpretation in an iterative manner (analytic induction) until theoretical saturation is achieved (newly analyzed data do not prompt further changes to the concepts) which leads to a tightly woven theory that emerges from and is ‘grounded’ in the data.” This approach, coupled with the use of “why” and “how” questions “...provide(d) depth and richness for constructing knowledge and building theories of contemporary and little known phenomena” (Binder and Edwards, 2010).

Strauss and Corbin (1998) provide a data and information coding methodology which allowed the researcher to systematically connect the information gathered through the interview process to the research objectives (i.e., research propositions, hypothesis and questions). The coding methodology applied to this research was:

Stage 1: Development of key template categories based on research objectives.

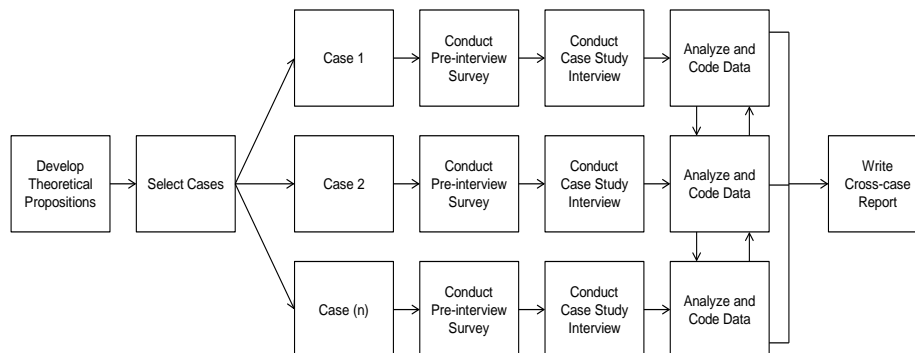
Stage 2: Codification and analysis of interviews.

Stage 3: Clustering of codes into coherent categories.

Stage 4. Development of coding master table (axial and selective coding).

Stage 5. Formation of theoretical narratives and tentative propositions.

Binder and Edwards (2010) suggest that this is not to be a linear approach from Stage 1 to 5, therefore the research approach involved iterations within and between stages as the researcher became more familiar with the data. Figure 4 below illustrates the high-level approach applied during the data collection and analysis process. It highlights the major steps of the approach which were required in order to achieve a high degree of research reliability (i.e., repeatability) (Yin, 1989). This reliability will enable expansion of the number of cases and inclusion of other industries in the future efforts.



**Figure 4 – Research Data Collection and Analysis Approach**



Information and data gathered through the interview and case study approach was synthesized in cross-case reports then used as substantive and supporting content, along with other literature and research content, to produce original research publications in support of the overall dissertation requirements.

### **3.0 Academic Paper #1 – Contract Duration: A Barrier or Bridge to Supplier-side Investment In Public/Private Partnerships**

#### **3.1 Abstract**

Public/private partnerships are predominantly executed through the use of formal contracts which define the relationship between the buying agency and a supplier. The contract captures the responsibilities of each party in achieving a specific set of performance objectives. Given current-year and expected future-year budget cuts across federally funded public agencies, there is an increasing need for suppliers to make investments which could reduce future-year costs of meeting contract performance objectives. This research addresses two overarching questions specific to the issue of supplier-side investment. First, “how does buyer and supplier perception of risk influence contract duration?” and second, “how does contract duration influence supplier-side investment?” To answer these questions, structured interviews were conducted with buying agencies and suppliers actively engaged in public/private partnerships. Factors suspected to contribute to buyer and supplier risk position are evaluated. Additionally, the linkage between buyer-supplier risk position, contract duration and supplier-side investment is addressed. Outcomes suggest properly structured long-term contracts may 1) provide the risk mitigation mechanisms needed for both buying agencies and suppliers, and 2) facilitate supplier-side investment. Key Words: public/private partnerships, supply chain contracts, buyer-supplier risk position, contract duration, supplier-side investment, supply chain performance

### **3.2 Introduction**

In light of the current global market and economic conditions, firms around the globe are working diligently to identify and assess risks to their short- and long-range objectives. In the United States, the significance of the global economic downturn is penetrating the business functions of even the strongest privately held firms and publicly traded companies. Tax-payer funded public agencies such as the U.S. Department of Defense (DoD) are also facing budget cuts which continue to force substantive changes to existing business policies and practices (Watts and Harrison, 2011). Global economic conditions, as well as current-year and expected future-year federal budget cuts, highlight the need to examine buyer-supplier contractual relationships within the context of public/private partnerships.

Many prominent researchers have completed exhaustive works examining buyer-supplier relationships from numerous vantage points. For example, much has been written addressing the type, development and utility of supply chain relationships, partnerships and alliances. Table 2 below highlights several of these notable contributions to the body of knowledge.

**Table 2 - Noteworthy Articles Addressing Supply Chain Relationships,  
Partnerships and Alliances**

<b>Author(s)</b>	<b>Title</b>
Dwyer, F. Robert, Paul H. Schurr and Sejo Oh (1987)	"Developing Buyer –Seller Relationships"
Bowersox, Donald J. (1990)	"The Strategic Benefits of Logistics Alliances"
Heide, Jan B. and George John (1990)	"Alliances in Industrial Purchasing: The Determinants of Joint Action in Buyer - Seller Relationships"
Ellram, Lisa M. (1995)	"Partnership Pitfalls and Success Factors"
Lambert, Douglas M., Margaret A. Emmelhainz, and John T. Gardner (1996)	"Developing and Implementing Supply Chain Partnerships"
Singh, Kulwant and Will Mitchell (1996)	"Precarious Collaboration: Business Survival After Partners Shut Down or Form New Partnerships"
Monczka, Robert M., Kenneth J. Petersen, Robert B. Handfield, and Gary L. Ragatz (1998)	"Success Factors in Strategic Supplier Alliances: The Buying Company Perspective"
Groves, Gwyn and Vassilios Valsamakis (1998)	"Supplier - Customer Relationships and Company Performance"
Spekman, Robert E., John W. Kamauff, Jr., and Niklas Myhr (1998)	"An empirical investigation into supply chain management: A perspective on partnerships"
Soonhong Min, Anthony S. Roath, Patricia J. Daugherty, Stefan E. Genchev, Haozhe Chen, Aaron D. Arndt, and R. Glenn Richey (2005)	"Supply chain collaboration: what's happening?"
Golicic, Susan L. and John T. Mentzer (2006)	"An Empirical Examination of Relationship Magnitude"
Hoffer, Adrian R., A. Michael Knemeyer, and Martin E. Dresner (2009)	"Antecedents and Dimensions of Customer Partnering Behavior in Logistics Outsourcing Relationships"
Li, Julie Juan, Laura Poppo, and Kevin Zheng Zhou (2010)	"Relational Mechanisms, Formal Contracts, and Local Knowledge Acquisition By International Subsidiaries"

As called out above, much has been published addressing the multiple dimensions of buyer-supplier relationships. However, there appears to be a void in the supply chain management literature with respect to public/private partnerships in general and, more specifically, the function of long-term, formal contracts in public/private partnerships. Insights gained from the existing literature were used to inform the current research and assist in providing a platform from which to examine the linkage between the buyer-supplier risk position, contract duration and supplier-side investment in public/private partnerships.

The historical foundations for the application and utility of long-term contracts may go back further than Coase's 1937 seminal article, *The Nature of the Firm*, but there are few scholarly works which have been cited as often or as widely to help address the

multiple facets of business enterprises. Of importance to the present research is Coase's specific mention of the use of long-term contracts in the business enterprise:

It may be desired to make long-term contract for the supply of some article or service. This may be due to the fact that if one contract is made for a longer period, instead of several shorter ones, then certain costs of making each contract will be avoided. Or, owing to the risk attitude of the people concerned, they may prefer to make a long rather than short-term contract. (Coase, 1937, pp 391)

### 3.2.1 The Long-term Contract

With respect to a single long-term contract instead of several shorter ones, there is an expected reduction of costs attributable to contract formulation and administration. Consistent with Coase's approach to buyer-side total cost reduction, Graham *et al.*, (1994) conclude there is greater success in decreasing costs achieved for buyers than that observed for suppliers in long-term strategic purchasing partnerships. Frascatore and Mahmoodi (2008) discovered that collaboratively developed long-term contracts in which the business relationship is repeated, increased the supply chain profit potential. Long-term contracts should also be expected to facilitate or maximize development of trust and communication in the buyer-supplier relationship (Bensaou and Venkatraman, 1995).

In addition to costs reductions and depth of relationship development, other researchers suggest buyer firms achieve additional benefits through long-term supplier development efforts (Krause and Ellram, 1997). If, as has been well documented, there are significant value positions to be taken in long-term buyer-supplier contracts / exchanges, the overarching questions which must be answered are first, "*how do buyer*

*and supplier perception of risk influence contract duration?”* and second, *“how does contract duration influence supplier-side investment?”* This research attempts to address these questions as part of the larger and increasingly more important focus on potential uses of long-term contracts to create sustainable public/private partnerships.

### 3.2.2 Risk Attitude

In addressing Coase’s *risk attitude of people concerned* statement cited above, it is relevant here to introduce his 1988 position that the main activity of a firm is that of running a business (Coase, 1988). It is common knowledge that running a business inherently includes elements of risk. However, it is important here to acknowledge that risks in the buyer-supplier relationship, perceived or real, do not singularly belong to either the buyer or the supplier. It may be through this lens that a key function of long-term contracts is seen, that of addressing risk in the buyer-supplier relationship which could adversely affect achievement of short- and long-term business objectives. Thus there is a dynamic, rather than static, view of the value placed on long-term contracts or “legal bonds” dependent upon the relationship position and risk perception (Cannon and Perreault, 1999).

In the literature we find insight into how firms may elect to structure contracts to manage risks in the business enterprise. Williamson (1985 and 1993), from the buyer’s perspective, presents the supplier as an opportunistic, advantage seeking agent. In this case, the buyer may develop detailed contracts to govern supplier opportunism in the relationship. The buyer perceives the detailed contract to serve as a mechanism to mitigate uncertainty and increase security (Glaister and Buckely, 1997). However,

Wuyts and Geyskens (2005), provide evidence that detailed contracts may encourage opportunistic behaviors, not prevent them.

Another view of the supplier is that presented by Macneil (1978, 1980, 1981). Here the buyer may view the supplier as a cooperating partner in the buyer-supplier relationship. This position is supported by Provan and Gassenheimer (1994) where they suggest that, “by cooperating and focusing on long-range outcomes, both buyer and supplier may well be able to compete more successfully than in traditional market or contract-based exchange since transaction costs related to opportunism will be low and pressures for short-run results will be few.” Using the Williamson and MacNeil views as a backdrop, we seek to understand the function of long-term contracts as a mechanism to promote supplier-side investments in areas which improve overall supply chain operations.

### **3.3 Literature Review and Proposition Development**

As Handfield and Bechtel (2002) identified, there is a need for a better understanding of the role of contracts in managing buyer-supplier relationships. It is our central proposition that long-term formal contracts do matter in the context of creating stability in the buyer-supplier exchange. Given the documented value of long-term contracts/exchanges, and with consideration of risk attitudes, we propose it is this collective risk position which directly influences desired contract duration. Furthermore, we propose it is long-term contracts that enable or facilitate supplier-side investments. We identify six propositions concerning the influence of perceived risk on contract duration and supplier-side investment. Propositions P1a through P4b address factors

contributing to the buyer-supplier risk position, Proposition P5 addresses buyer-supplier contract duration and Proposition P6 addresses the influence of contract duration on supplier-side investment.

We speculate that buyers and suppliers consciously evaluate perceptions of collective risk (P1a – P4b) and it is the collective risk which drives determination of an appropriate contract duration (P5) necessary to mitigate the perceived risk. Additionally, it is posited that suppliers perceive investments as a risk in the absence of a long-term formal contract. We posit that with a long-term contract in place, suppliers will make investments in processes and technologies necessary to improve supply chain operations (P6). The significant research contributions expected are a) the collective assessment of the influential factors as a function of buyer and supplier risk position, b) the effect of risk position on contract duration, and c) the effect of contract duration on a supplier's willingness to make investments. The research propositions investigating these contributions are formalized below.

### **3.3.1 Perception of Partnership Motive**

For the purposes of this research, we define *Perception of Partnership Motive* as the buyer's (supplier's) perception of supplier's (buyer's) underlying purpose or rationale for seeking to formalize a long-term contractual relationship. Andrew Cox (2001) may put it best, "individuals and organizations primarily indulge in exchange relationships in order to satisfy their desire for money." With this lead in proposition, we are suggesting that the buyer's perception of why the supplier seeks to engage in a contractual buyer-supplier relationship, aside from the 'desire for money' is an important issue. We posit



that how the buyer perceives the supplier's motive for entering the relationship is a key contributing factor in the buyer's risk position. Dwyer, Schurr and Oh (1987) contend that if the buyer-supplier goals in the relationship are divergent it could expose the buyer to opportunity costs of forgone exchanges with other suppliers. Therefore, inaccurate assessment of the supplier motive could have considerable long-term implications. We posit these same concerns are shared on the supplier-side.

While there has been extensive work done in the area of supplier relationship management (for example see Park *et al.*, (2010)), to include areas such as supplier selection and supplier management, there is much less in the literature specifically addressing supplier-side motives for seeking contractual business relations with specific firms. However, one such piece of work relevant to this issue is that developed by Ellram (1995). In a study based on 80 paired responses of buyers and suppliers, Ellram notes that the number one reason why suppliers enter into partnerships is to "secure a reliable market for a given product." Additional reasons may include the price the supplier is able to receive and the ability to establish reliable or predictable demand.

Hald, Cordon and Vollman (2009) provide another basis for understanding the expected value a supplier may seek to attain in engaging in long-term relationships with buyers. Here we find two motives discussed, "price/volume" and "growth". Price/volume suggests that suppliers will seek out buyers that are willing to pay higher prices for more value. Growth recognizes that suppliers will seek out buyers who are expanding which may lead to increased sales and revenue for the supplier through higher volumes. Additional reasons suppliers may seek to engage with buyers could include expansion of customer base, to improve efficiency of production capacity, to gain access

to buyer knowledge, to protect against market instability, or to establish long-term revenue streams. Our intent here is to understand the importance buyers and sellers place on the perception of the partner's motives and the contribution of motive to buyer-supplier risk position. We submit the following propositions for evaluation:

**Proposition 1a. Buyer's perception of the supplier's partnership motive is an important influential factor in determining the buyer-side risk position.**

**Proposition 1b. Supplier's perception of the buyer's partnership motive is an important influential factor in determining the supplier-side risk position.**

### 3.3.2 Perception of Relationship Trust

Hald, Cordon and Vollman (2009) provide insight into the dyadic buyer-supplier relationship, "the challenge for managers is to provide mechanisms that create perceptions of own firm as valuable, and trustworthy in the eyes of their dyad associate." Here we define *Perception of Relationship Trust* as the buyer's (supplier's) perception of supplier's (buyer's) willingness to engage honestly and, where appropriate, openly in the formal long-term contractual relationship. Our proposition pre-supposes that the buyer's investigation of the supplier's trustworthiness is deep enough to get beyond the 'perceptions' purposefully created and portrayed by the supplier. We propose the same should be true of the supplier's investigative approach. In other words, our research acknowledges but does not evaluate a buyer's or seller's 'perception of perceptions'. We are interested in understanding how buyers and sellers perceive that each will perform whatever serves the trustor's best interest (Das and Teng, 1998). As in our definition of relationship trust above, we are seeking to evaluate how perception of the ability and

willingness to engage honestly and openly is linked to a risk position and, in-turn to formal contract duration.

An aligned investigative position relevant to understanding how relational trust influences buyer-supplier risk position and, in-turn, contract duration, is to determine whether or not the perception of relational trust is time dependent, i.e., transaction-specific or strategic in nature. There is an important distinction. Jones *et al.*, (2010) highlight that higher levels of trust are required in collaborative relationships than those observed in transactional or arms-length relationships. Therefore, we should anticipate perceptions of relational trust associated with short-term, transaction-specific events to contribute less in shaping the buyer-supplier risk position than if the intent is to engage in a long-term, strategic relationship.

Trust may be, as Spekman (1988) suggests, the cornerstone of strategic partnerships but if the buyer's focus entering into the buyer-supplier relationship is not strategic, this creates a different evaluative lens from which to view the supplier. We propose, as Zaheer *et al.*, (1998) determined, firms engaging in exchange relationships that have high trust to derive a competitive advantage. In the Jones *et al.*, (2010) capability / commitment matrix, we see that buyer's perception of relational trust is an important influential factor to be considered in light of the complexities of developing trust at the level "requisite for collaborative relationships that bring competitive advantage." Again, if there is no intent from the buyer to extend the relationship beyond one or more short-term transactions, or from the supplier to seek development of competitive advantage, then we may discover that trust does not significantly contribute

to the buyer-supplier risk position. To evaluate this, we provide the following propositions:

**Proposition 2a. Buyer's perception of the supplier's relationship trust is an important influential factor in determining the buyer-side risk position.**

**Proposition 2b. Supplier's perception of the buyer's relationship trust is an important influential factor in determining the supplier-side risk position.**

### 3.3.3 Performance Objectives

A buyer or supplier's capability to meet performance objectives could be classified by skills, knowledge, experience or other resources utilized to meet buyer-specified performance objectives. Consistent with this view we define *Performance Objectives* as the buyer's (supplier's) confidence in the supplier's (buyer's) capability to achieve contracted product or service performance objectives. Johnston *et al.*, (2004) identify the importance of ensuring supplier performance dimensions align with buyer's objectives. The authors suggest that each buyer-supplier relationship is different and, as such, each relationship may require a unique set of performance measures. Prahinski and Benton (2004) consider supplier performance as operational measures such as product quality, delivery performance, price, service support and ability to respond to change. Shin, Collier and Willson (2000) provide supplier performance measures as supplier cost, delivery reliability, lead time, on-time delivery and quality. Buyer's and supplier's confidence may be influenced by the criteria or approaches used to evaluate the potential contract opportunity. Groves and Valsamakis (1998) identify supplier selection criteria as price, past performance, quality assurance, internal quality, technological capability, human resources, financial stability, design and R&D capability.

Buyers and suppliers must evaluate expected contract performance objectives in an effort to determine whether or not the performance objectives are realistic, achievable, or contain undefined levels of uncertainty which may expose the supplier to additional risk. Buyers and suppliers must also establish evaluative criteria from which to gauge levels of risk presented as performance objectives. Here we seek to understand how buyers and suppliers assign measures of risk to contract performance objectives. Propositions 3a and 3b below have been developed to facilitate this understanding. While the supply chain literature is rich with supplier selection and supplier performance approaches, there appears to be an absence of literature addressing approaches suppliers use to evaluate potential buyers. The evaluation of Proposition 3b may provide some initial insights and help to establish a framework for future research in this area.

**Proposition 3a. Buyer's perception of the supplier's capability to achieve contracted product or service performance objectives is an important influential factor in determining the buyer-side risk position.**

**Proposition 3b. Supplier's perception of the buyer's capability to achieve contracted product or service performance objectives is an important influential factor in determining the supplier-side risk position.**

#### **3.3.4 Financial Objectives**

Central to the discussion of buyer-supplier inter-firm dynamics is the understanding of the methods of achieving general and specific financial objectives. These objectives could be profit seeking, containment of financially-derived risk, quantifying expected returns on investment or even cost control. Kang, Mahoney and Tan (2009) capture rationale for why suppliers may make strategic buyer-specific investments without revenue guarantee if there is perceived opportunity to develop and

extend value with the same buyer or with a third party. However, we do not seek to identify and codify specific financial objectives in this research. Our interest is to understand how the buyer's and supplier's perception of their own responsibilities to the intra-firm financial objectives influence the collective buyer-supplier risk position. In support of this we define *Financial Objectives* as the buyer's (supplier's) confidence in the supplier's (buyer's) willingness to support achievement of intra-firm fiscal objectives resulting from the formation of the contractual relationship. We posit that incongruence of understanding between buyer and supplier views on how the inter-firm relationship can support achievement of intra-firm financial objectives will lead to significantly different degrees of perceived risk. Propositions 4a and 4b serve to support examination and evaluation of this.

**Proposition 4a. Buyer's responsibility for achieving intra-firm financial objectives is an important influential factor in determining the buyer-side risk position.**

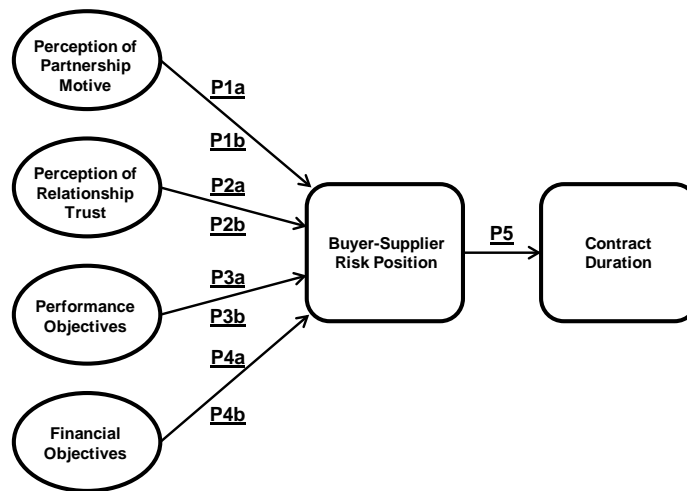
**Proposition 4b. Supplier's responsibility for achieving intra-firm financial objectives is an important influential factor in determining the supplier-side risk position.**

### **3.3.5 Buyer-Supplier Risk Position and Contract Duration**

We introduce the following diagram (Figure 5) to illustrate the preceding influences addressed in Propositions 1a - 4b. The *Buyer-Supplier Risk Position* begins to speak to the collective pool of risks resulting from the perception of partnership motive and relationship trust as well as views on performance and financial objectives. We posit risk pooling and impact analysis occurs for both buyers and sellers in the overall evaluation of the potential business relationship. Hallikas *et al.*, (2004) validate the

extent of this, “every company is responsible for its own risks, it must identify the risks from its own viewpoint.” Our focus here is the outcome of the risks analysis and the effect collective risk has on the buyer or seller’s preferred contract duration. Again we are suggesting that the ability to mitigate collective risk in the contractual relation is a critical element in determining desired contract duration. Proposition 5 captures this focus.

**Proposition 5. Buyer – supplier collective risk position directly influences desired contract duration.**



**Figure 5 - Risk Position and Contract Duration**

### 3.3.6 Contract Duration and Supplier-side Investment

Williamson’s (1996) position on transaction cost theory emphasizes the importance of analyzing individual transactions to ensure alignment with strategic objectives and to minimize risks. Proposition 6 seeks to understand how contract duration acts to enable supplier investment in processes or technologies which could, if

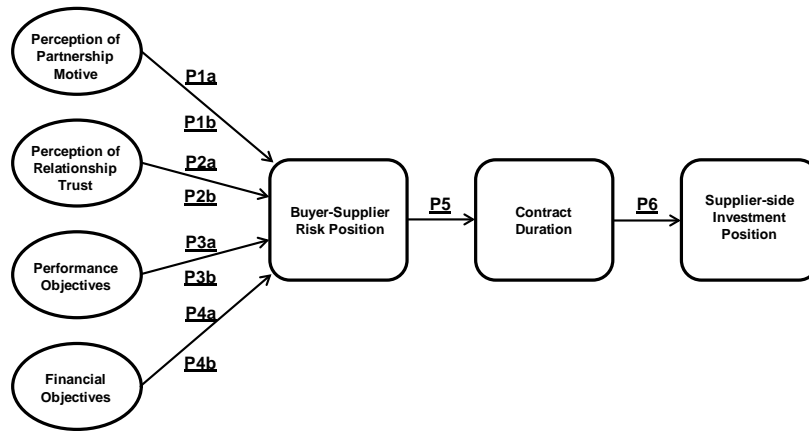
made, improve overall supply chain performance. We posit long-term, complete contracts serve as the risk protection mechanism which provides suppliers the basis for evaluating strategic investment strategies. Banerjee, Dasgupt and Kim (2008) discuss ‘complete’ contracts as those that minimize ex post bargaining and opportunism after specific investments have been made. Here we are addressing asset specificity investment--those investments which the supplier would not otherwise make were it not for the specific contractual relationship. Hines (1994) categorizes these types of investments as physical, site, human and dedicated assets. Trent and Monczka (1998), in their survey addressing future purchasing and supply management trends, expected “at least half of all contracts to be long-term” within the next several years. They suggested that this would be in response to a continuing need to reduce transaction costs in the buyer-supplier relationship. We extend this position and posit that contracts in public/private partnerships will increase in duration in response to the need for public agencies to not only reduce costs but significantly improve overall supply chain performance through supplier-side investment.

For the purposes of this research, we define long-term contracts as those which exceed three years. This position is developed from Graham *et al.*, (1994) where they found that after three years of involvement in partnership-type relationships there was a “trend toward increased or accelerated success in strategy implementation.” Proposition 6 addresses the role long-term contracts may serve in enabling suppliers to make strategic investments. Ojala and Hallikas (2006) state the type of buyer-seller relationship affects the perceived risk related to a supplier’s willingness to make investment. Williamson (1985) suggests relationship-specific investments are a necessary function leading to



value creation within the overall buyer-seller system. We propose that it is the long-term contract in public/private partnerships which enables suppliers to make this investment. Figure 6 below graphically illustrates the relationship and linkage of research propositions as presented above. The research approach and outcomes are discussed in the sections that follow.

**Proposition 6. A long-term buyer – supplier contract enables supplier-side strategic investment.**



**Figure 6 - Relationships and Linkages of Research Propositions**

### 3.4 Research Approach

As the primary questions revolve around ‘how’ and ‘why’, and the focus was on “a contemporary phenomenon within some real-life context,” (Yin, 1989), a qualitative multiple-case study research strategy was deemed appropriate for this research (Ellram, 1996). In order to gain a broad understanding of the propositions, the researchers conducted structured interviews with senior executives, program managers, buyers and purchasing officials from fifteen buying agencies and suppliers actively engaged in public/private partnerships. The organizations interviewed are listed in Table 3 below.

The organizations were selected following the Eisenhardt and Graebner (2007) approach, “because they are particularly suitable for illuminating and extending relationships and logic among constructs.” Although a single case study would be sufficient for describing the phenomenon under study (Siggelkow, 2007), Yin (1994) suggests multiple-case studies provide a stronger position for theory building. It is with this in mind that we suggest this research and subsequent results are best classified as an exploratory study from which to build future public/private partnership research upon.

**Table 3 - Buying Agencies and Suppliers**

Boeing--C-17 Program	Grainger	Stanley Proto
Boeing--F/A-18 Program	Kimberly Clark Professionals	Store Room Solutions
Chrysler	Lockheed Martin--F-35 Joint Strike Fighter Program	United States Air Force, Aeronautical Systems Center Contracting Officials
E&R Industrial	Pratt & Whitney	United States Air Force, Oklahoma City Air Logistics Center, Acquisition Center of Excellence
GEXPRO	Royal Australian Air Force	WESCO

Due to the sensitivity of public/private contractual relations and the competitive nature of government contracting the following assurances were provided to each participant. First, in order to protect the anonymity of the participating agencies and organizations, we randomly assigned alpha designations as reflected in Table 4. There is no implied nor inferred ordering or connection between Tables 3 and 4. Second, quotations are assigned to a position rather than a specific agency, organization or individual, i.e., “as a senior supply chain manager said.” This approach may provide the necessary protective measures requested by the participants yet allows both scholars and practitioners to gain insights and applications from the findings.

The research approach used standardized, mostly open-ended interviews with the structured questions providing a framework for the interview. Data was collected using the long interview method developed by McCracken (1988), as well as application of interview techniques outlined by Yin (1989) and Patton (2002). In addition, the researchers made provisions to digitally record and then transcribe each interview to help ensure content accuracy. The researchers utilized a selective coding method to identify specific drivers and sub-dimensions (Strauss and Corbin, 1998).

### 3.5 Findings

Each proposition is addressed in a summary manner in the sections below based on an inclusive review and cross-case comparison of the interviews. Our starting point was an evaluation of the influential factor rankings. Based on the categorical definitions provided, each interviewee was asked to rank or prioritize the influential factors contributing to buyer-supplier risk position where a ranking of 1 is considered most influential and a ranking of 4 is considered least influential. Table 4 summarizes the collection of responses.

**Table 4 - Summary of Influential Factors**

	Influential Factor	Organization															Total
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	
<div> <div>Most Influential</div> <div>↑</div> <div>↓</div> <div>Least Influential</div> </div>	<i>Financial Obligations</i>	1	1	1	1	1	2	3	1	1	2	1	1	1	2	4	23
	<i>Performance Objectives</i>	2	2	3	2	2	1	1	2	2	1	4	2	2	1	3	30
	<i>Relationship Trust</i>	3	3	2	4	3	3	2	3	4	3	2	3	4	3	2	44
	<i>Partnership Motive</i>	4	4	4	3	4	4	4	4	3	4	3	4	3	4	1	53

Here we see from a summary perspective the ranking of influential factors from most influential (Financial Obligations) to least influential (Partnership Motive). While this summary is informative, perhaps more important is the specific rationale or support/defense of the rankings discovered during the interview process. Several of these specific references are incorporated within the proposition summaries below where they provide context and structure to the numerical values. Additionally, broader generalizations have also been included based on the collection of information obtained throughout the interview process.

Propositions 1a-4b have been evaluated using information summarized in Table 4 above as well as information pulled through the cross-case comparison of interview responses. Propositions 5 and 6 were evaluated using cross-case comparison of the interviewee responses gathered through the structured interview process. For the purposes of this research the following definitions have been applied in evaluating each proposition against the information gathered:

- *Supported*: Consistency of support in responses
- *Partially Supported*: Inconsistency of support in responses; exceptions noted
- *Not Supported*: Responses consistently did not support the proposition; Exceptions noted

### **3.5.1 Evaluation of Propositions 1a-1b: Perception of Partnership Motive**

**Proposition 1a. Buyer's perception of the supplier's partnership motive is an important influential factor in determining the buyer-side risk position.**

**Proposition 1b. Supplier's perception of the buyer's partnership motive is an important influential factor in determining the supplier-side risk position.**

Findings: Not Supported. Propositions 1a and 1b allowed for a combined summary due to the parallel of responses from buyers and suppliers. With respect to the definition *Perception of Partnership Motive* we found buyers and suppliers did not consider the ‘motive’ of the potential relationship participant as a significant influential factor contributing to an overall risk position and impact contract duration in public/private partnerships. Ten of fifteen interviews ranked Partnership Motive as the least influential factor contributing to buyer-supplier risk position and desired contract duration. Acknowledging the single interviewee who assigned a ranking of 1 (most important) to this factor, their focus was on the need to ensure buyer-supplier motives were aligned early on in discussions of a potential contractual partnership.

Although buyers and suppliers did not consider partnership motive significantly influential, several interviewees, both buyers and suppliers, did acknowledge the importance of ensuring buyer-supplier motive alignment. From the buyer-side perspective, supplier motive in public/private partnerships is rarely considered as a significant influence as there is an assumption the supplier has a profit seeking motive. A senior public agency contracting official suggests, “it is the buyer’s responsibility to ensure this motive is addressed through competitive market research.” Where buyers may seek to mitigate influence of the supplier through market research, both buyers and sellers acknowledge the need to achieve some measurable degree of motive alignment. This position may be best reflected in a statement provided by a supplier-side senior manager, “if the motives are aligned then it is easy to get to the right performance and price outcomes” in the contract and the correct contract type and duration that will

support these outcomes. With these findings we could not conclude that buyer or supplier motive was an important influential factor effecting the buyer-supplier risk position.

Based on Table 4 and the information gathered during the structured interview process, we did not find sufficient support for Propositions 1a and 1b and therefore conclude that each is not supported. Buyer and supplier motives are relevant to the discussion in as much as motives may drive behavior. However, in public/private partnerships, partnership motives do not appear to be considered as a factor significantly contributing to the overall buyer-supplier risk position.

### **3.5.2 Evaluation of Propositions 2a-2b: Perception of Relationship Trust**

**Proposition 2a. Buyer's perception of the supplier's relationship trust is an important influential factor in determining the buyer-side risk position.**

Findings: Partially Supported. Buyer's perception of supplier's relationship trust in public/private partnerships was identified as one of many elements considered during initial market research (i.e., pre-contract supplier evaluations) and prior to any decision to formally engage in a contractual relationship with any new supplier(s). Our findings suggest that the process of market research may serve as a substitution for trust in pre-contract public/private partnerships. Although trust does not appear to be a significant influential factor (in Table 4) contributing to the initial risk position of the buyer, instances were noted where supplier trust may be considered post-contract award. In discussing the effect of trust, several buyers stated that the degree to which the supplier

was willing to engage honestly in addressing critical supply chain issues during the initial contract period of performance is an area given significant consideration during discussions of contract renewal. In other words, the buyer's perception of relationship trust is developed post contract award and is linked to supplier performance. For example, in one specific case cited during the interview process, a supplier had worked with the buyer to resolve and improve supply chain performance issues which resulted in a no-compete multi-year follow-on contract. As seen here, trust may not have been a significant factor pre-contract award but was influential in determining contract continuation and/or renewal. Based on these findings we conclude Proposition 2a is partially supported.

**Proposition 2b. Supplier's perception of the buyer's relationship trust is an important influential factor in determining the supplier-side risk position.**

Findings: Partially Supported. Here it is important to note there are key differences in how suppliers address the importance of relationship trust depending on the type of contractual relationship they have entered. First, in transactional buyer-supplier relationships, perception of buyer's trust may be limited in scope to areas such as "ability of the buyer to make timely payment for materials shipped" or "not disclosing our confidential pricing to our competitors" as called out by two senior supplier-side representatives. In this case, the supplier is concerned with the buyer's ability to meet minimum business objectives. Second, for those suppliers engaged in performance-based contracts, one senior manager stated, "relationships and trust are fundamental to even

getting to the table” to begin contract negotiations. Here the supplier’s perspective is that of ensuring the buyer is focused on developing contract performance objectives that are achievable and realistically measured. In both cases the supplier is looking at relationship trust as an informal mechanism needed when addressing issues not specifically called out in the formal contract which inherently arises during contract execution. Trusting the buyer will enter into the contractual relationship with this mindset is very important to the success of the supplier in both transactional and performance-based contract relationships.

An interesting area that emerged during the interviews involved discussions addressing the supplier’s ability to trust the buyer with responsible management of the supplier’s brand. Senior executives representing one supplier-side company stated, “a supplier’s perception of the buyer’s relationship trust must include discussion of protecting our brand image as a contributor to risk position.” The context of this statement included discussion of protection of proprietary processes, technologies and data/information which if disclosed could negatively impact the supplier’s competitive position in the market. In response to these discussions, we brought this point up during follow-up discussions with a group of public agency buyers. One buyer-side manager suggested that the buyer’s trust in the company’s brand and working with the supplier to protect that brand image is very important and that in public/private partnerships public agencies work to protect supplier interests.

Table 4 indicates that *Perception of Relationship Trust* is ranked third out of four factors evaluated. However, based on information gathered during the structured interview process we conclude that Propositions 2a and 2b are partially supported. There



are some inconsistencies noted but we did find that both buyers and suppliers identify relationship trust as a factor contributing to buyer-supplier risk position in public/private partnerships.

### 3.5.3 Evaluation of Propositions 3a-3b: Performance Objectives

**Proposition 3a. Buyer's perception of the supplier's capability to achieve contracted product or service performance objectives is an important influential factor in determining the buyer-side risk position.**

Findings: Supported. Here we are gauging the importance placed by the buyer on the supplier's capabilities. Although the ranking of influential factors suggest *Financial Objectives* is the most important factor, throughout the interviews both buyers and sellers shared more detail concerning the importance of *Performance Objectives* in shaping the risk position.

Buyers evaluate the supplier's products, as well as services, with respect to their capability to achieve contract-specific objectives. Many buyers expressed their belief that the proper sequence should be to accurately identify requirements then evaluate potential capabilities of potential suppliers. Here buyers assign risk based on the perception of the supplier's capabilities based on demonstrated past performance or other less formal means such as reputation in the market. In transactional relationships, risk is carried forward from one transaction to the next. In long-term partnerships, however, buyers acknowledge there are times when the outcome is better achieved when suppliers are involved early on in the requirements development process. In these cases, a core step in the process is to seek supplier input, collaboratively focusing on requirements development. For example, buyers understand suppliers may be best positioned to

address very complex supply chain or material solutions, therefore a jointly developed requirements baseline can best be achieved between buyer and seller subject matter experts. This second process appears to significantly decrease the buyer risk position and is consistent with the position advocated by Johnston *et al.*, (2004), ensuring supplier performance measures align with buyer's objectives. Our research does find an abundance of content, including factor rankings, to firmly conclude Proposition 3a is fully supported. The buyer's belief the supplier has the capability to achieve contracted objectives very much influences the overall buyer-side risk position.

**Proposition 3b. Supplier's perception of the buyer's capability to achieve contracted product or service performance objectives is an important influential factor in determining the supplier-side risk position.**

Findings: Supported. There is no single area in the interview process which received as much attention from suppliers as *Performance Objectives*. There are two interrelated key components of these discussions, buyer's role in accurately defining requirements and the development of supporting metrics or performance measures. One supplier-side executive said, "requirements can be aggressive but must be aligned with the correct performance measures" if the supplier is to be able to allocate the resources necessary to be successful. Another said the key question is, "how long will it take to implement" the supply chain strategy in order to begin satisfying the performance requirements. In both cases, the foundational element which has the ability to reduce the contribution of this factor in supplier risk position is the accuracy of performance

objectives. The consistent discussion across interviews concerning these key areas allows us to consider this proposition supported, without exception.

Some suppliers have even suggested the creation and use of a “publishable performance” record which would provide potential competitors insights into the supplier’s performance. The senior managers suggesting the use of a published performance record, excluding any proprietary information, supports development of open communications between buyers and potential sellers. This approach would allow potential competitors an insight into how the current contract holder is performing against the measures of performance and allows competitors to make decisions concerning future pursuit of a potential buyer’s business. The premise of their position is that if competitors see the supplier is performing well they may not be inclined to pursue the contract should it come up for competition. Additionally, if the current supplier is not performing well, other suppliers can inquire about why the current supplier is not able to achieve the buyer’s targeted performance levels. The inability to meet the performance objectives could be a sign that the buyer has unnecessarily high performance levels that cannot be achieved. The suppliers who support this type of shared disclosure suggest this is a form of shared risk mitigation strategy in the market. In all cases, a supplier’s belief that the buyer has the ability to achieve stated performance objectives is considered a significant contributor to the supplier’s risk position.

Based on our findings, we conclude Propositions 3a and 3b are supported. The interviews and factor rankings indicate clearly defined requirements and performance measures are important areas of the buyer-seller risk position.

#### 3.5.4 Evaluation of Propositions 4a-4b: Financial Objectives

**Proposition 4a. Buyer's responsibility for achieving intra-firm financial objectives is an important influential factor in determining the buyer-side risk position.**

**Proposition 4b. Supplier's responsibility for achieving intra-firm financial objectives is an important influential factor in determining the supplier-side risk position.**

Findings: Supported. Propositions 4a and 4b are addressed in a single summary since our research findings suggest both buyers and sellers share very similar concerns with respect to ensuring the buyer-supplier relationship supports achievement of intra-firm financial objectives. For buyers, the key focus is ensuring the best product or best service is acquired which meets specific intra-firm financial objectives. Working with suppliers to reduce cost, even post contract award, is a determining factor in the selection of long-term strategic partners. For suppliers, the key focus is on protecting or preserving the ability to achieve intra-firm financial objectives as supported by the specific buyer-supplier relationship. If investment is required on behalf of the supplier firm, the key focus is on developing a contractual relationship with the buyer which affords every opportunity to meet financial targets while at the same time minimizing risk exposure.

Our research suggests there are opportunities in most public/private contractual relationships to expand the understanding of shared financial objectives. Buyers seeking to reduce cost must ensure the supplier has the ability to assist. One senior supply-side manager believes, "buyers must be willing to engage in long-term strategic buys if they want suppliers to reduce per-unit costs." In other words, suppliers may have the ability to assist the buyer in minimizing risk to intra-firm financial objectives but there is a need for

a more open, collaborative relationship. This can also be said in the case of the supplier. Suppliers must be willing to expose cost information (without fear of the buyer releasing the information to competitors) and demonstrate an understanding of cost reduction strategies which would assist the buyer.

In both cases, for buyers and suppliers, the ability to achieve intra-firm financial objectives is considered to significantly contribute the buyer-supplier risk position. Based on Table 4 findings and the review of interviewee comments, we conclude Propositions 4a and 4b are supported.

### **3.5.5 Evaluation of Proposition 5: Buyer-Supplier Risk Position and Contract Duration**

**Proposition 5. Buyer-supplier perception of collective risk position directly influences desired contract duration.**

Findings: Supported. Both buyers and suppliers see long-term contracts as a critical foundation for addressing highly complex or uncertain supply chain characteristics. However, both suggest that there are cases where short-term contracts may provide each party the opportunity to work through some of these uncertainties prior to engaging in a long-term contract.

Perhaps the best way to discuss this proposition is to assess the proposition from the individual vantage points of buyers and suppliers. From the buyer perspective our research reveals that in public/private partnerships involving low to medium risk, shorter term contracts are desired. This allows the public agency to re-compete contracted work, and where possible, decrease product or service costs. Another advantage of shorter term

contracts identified by buyers is the ability to re-compete these contracts more often over time and, in turn, grow the supplier base. The expanded supply base was positioned as a way to increase supplier competition with an expectation that this would lead to a reduction in buyer-side costs.

Where the public/private partnership includes contract objectives involving higher risks or uncertainties (i.e., new technology development) longer term contracts may be executed. Buyers suggest this allows the supplier time to stabilize the process or technology and better achieve contracted performance objectives. An interesting add to this discussion is the view of one senior public agency buyer who stated that contract “length doesn’t drive effectiveness; however, how the contract is structured does.” In this case, structure refers to how the supplier is paid for labor and material costs. The contract could be structured as a Firm Fixed Price, Time and Materials, Cost Plus or a hybrid including some form of incentive payment. Buyers stated that there is a current emphasis being placed on shorter-term contracts structured as Firm Fixed Price, suggesting that this will reduce the public agencies’ overall risk position. This approach suggests public agency buyers may prefer to apply a contract structure first before considering contract duration.

Contract duration is of primary importance with suppliers. Rather than putting contract structure first, suppliers engaged in public/private partnerships consistently stated that the preference is to have a contract of sufficient duration to mitigate risks, whether this risk is financial, performance or other firm-specific objective such as penetrating and sustaining market share. As one supplier executive stated, “the economy has turned up the heat on taking cost out of business. This may lead to shorter contracts

in the future.” However, suppliers suggest that shorter duration contracts, regardless of structure, force the supplier to recover contract-related investment costs on the front end of the contract which, if spread out across a longer duration could reduce buyer-side costs. Other suppliers suggest that in those cases where the supplier has significant upfront investment in support of developing complex technologies, the assumption of considerable risk is best mitigated through longer term contracts. The same position applies to cases where the achievement of contract-specific objectives involves substantial inventory investment or a requirement to provide highly specialized staffing. Our findings suggest that suppliers perceive that longer term contracts reduce supplier-side risk and may at the same time reduce buyer-side costs.

Based on our analysis of interviewee comments, we conclude Proposition 5 is supported. In nearly all cases, buyers and suppliers considered collective risk as a significant factor in determining desired contract duration.

#### **3.5.6 Evaluation of Proposition 6: Contract Duration and Supplier-side Investment**

**Proposition 6. A long-term buyer-supplier contract enables supplier-side strategic investment.**

Findings: Supported. Supplier-side investment is often linked to specific customers in the public/private partnership model. For example, one supplier executive stated, “we are committed to supporting our customers. What they don’t understand is that our commitment involves risks—financial risks, opportunity risks, and risks to our employees and shareholders.” This point is reflective of suppliers whose products or

services are customer unique and have very little, if any, transferable value to another customer. Most suppliers interviewed perceived shorter duration contracts as an impediment to making investments which could significantly improve contract objective achievement and improve overall customer support.

When interviewees were asked about optimal contract duration which would facilitate supplier-side investment, most suppliers suggested contracts should have a duration of greater than three years, ideally five to seven years. This assumes investment is made in year one and two, allowing for recoupment of investment costs and achievement of profitability targets years three, four and five. These findings suggest the long-term contract serves as the foundation from which the strategic investment decision is formed and provides the framework for recouping buyer-specific investment cost. Without longer-term contracts, supplier-side investment exposes the supplier to unacceptable levels of risks. Most suppliers agreed that short-term contracts provide no incentive for suppliers to make investments beyond those minimally required to meet contract performance objectives.

Our research indicates that suppliers engaged in public/private partnerships which require significant supplier-side investment in order to achieve buyer-side contract-specific objectives or to improve overall supply chain performance are dependent upon longer-term contracts. Given these findings, we conclude that Proposition 6 is supported.



### 3.6 Conclusions

Our research assessed factors perceived to influence the collective buyer-supplier risk position and the effect this risk position may have on contract duration in public/private partnerships. We examined the linkage between buyer-supplier risk position, contract duration and supplier-side investment. We found that longer-term contracts enable both buyers and suppliers to mitigate contract-specific risks and facilitate supplier-side investment. Table 5 below summarizes the research findings.

**Table 5 - Proposition Summary of Findings**

<i>Proposition</i>	<i>Results</i>	<i>Summary of Findings</i>
Proposition 1a. Buyer's perception of the supplier's partnership motive is an important influential factor in determining the buyer-side risk position.	Not Supported	10 of 15 interviewees ranked Partnership Motive as the least influential factor of four considered to contribute to the buyer-supplier risk position. Buyers and suppliers agree that the other participants motive is important and suggest 'motive alignment' is an enabler of successful buyer-supplier relationships. However, in public/private partnerships, partnership motives do not appear to be considered as a factor significantly contributing to the overall buyer-supplier risk position.
Proposition 1b. Supplier's perception of the buyer's partnership motive is an important influential factor in determining the supplier-side risk position.	Not Supported	
Proposition 2a. Buyer's perception of the supplier's relationship trust is an important influential factor in determining the buyer-side risk position.	Partially Supported	For contracts with new suppliers, market research replaces the need for trust and therefore trust does not significantly contribute to the buyer-side risk position. Trust does however contribute to buyer-side risk position during contract extension / renewal.
Proposition 2b. Supplier's perception of the buyer's relationship trust is an important influential factor in determining the supplier-side risk position.	Partially Supported	Buyer relationship trust is much less significant in short-term, transactional contract relationships than for long-term contracts. Suppliers consider the buyer's ability to protect company brand and proprietary information a contributing trust-related risk factor.
Proposition 3a. Buyer's perception of the supplier's capability to achieve contracted product or service outcomes is an important influential factor in determining the buyer-side risk position.	Supported	Buyers evaluate the supplier's products, as well as services, with respect to their capability to achieve contract-specific objectives. Buyers assign risk based on the supplier's demonstrated past performance which directly influences buyer-side risk position.
Proposition 3b. Supplier's perception of the buyer's capability to achieve contracted product or service outcomes is an important influential factor in determining the supplier-side risk position.	Supported	Suppliers consider the buyer's contract performance objectives and how these objectives can be achieved. Two issues are identified: buyer's role in accurately defining requirements and development of supporting metrics or performance measures.
Proposition 4a. Buyer's responsibility for achieving intra-firm financial objectives is an important influential factor in determining the buyer-side risk position.	Supported	Buyers and suppliers both seek to minimize financial risk exposure. Buyers seeking to reduce cost must engage suppliers in development of cost cutting strategies. Suppliers seeking to maximize relational profits over the long term must be willing to share cost build up with buyers and work toward mutually agreeable costing strategies. Both buyers and sellers see Financial Objectives as one of the most important factors contributing to the buyer-supplier risk position.
Proposition 4b. Supplier's responsibility for achieving intra-firm financial objectives is an important influential factor in determining the supplier-side risk position.	Supported	
Proposition 5. Buyer-supplier perception of the collective risk position directly influence desired contract duration.	Supported	From the buyer's perspective, shorter-term contracts are preferred for achieving objectives with low to medium risk. Longer-term contracts support achievement of objectives involving higher risks or uncertainties. Suppliers prefer to have a contract of sufficient duration to mitigate risks i.e., financial or performance risks. Buyers suggest contract structure is more important than duration while suppliers perceive contract duration is more important if the focus is on achieving cost reduction objectives.
Proposition 6. A long-term buyer-supplier contract enables supplier-side strategic investment.	Supported	Most suppliers agreed that short-term contracts provide no incentive for suppliers to make investments beyond those minimally required to meet contract performance objectives. Contract duration greater than 3 years is desired to enable supplier-side investment, 5-7 years is considered optimal.

Our findings suggest that buyers and suppliers consciously evaluate perceptions of collective risk—Perception of Relationship Trust, Performance Objectives, Financial Objectives—and that Partnership Motive is not specifically considered in terms of risk in public/private partnerships. Partnership Motive is considered important in terms of achieving ‘motive alignment’ due to the recognition that contract objective achievement can be accomplished when buyers and suppliers have a shared understanding of the objectives and measures of performance.

For buyers, shorter term contracts are preferred for public/private partnerships involving low to medium risks. These shorter term contracts are perceived to support public agency objectives to reduce contract costs and grow the competitive supplier base. However, suppliers perceive shorter term contracts actually increase buyer-side costs because suppliers must recoup contract-specific costs upfront. Our empirical research supports the supplier’s perspective and is consistent with the statement appearing in the Carr and Pearson (1999) article, “the use of purchasing practices that increase competition among suppliers tends to increase the cost of the supplier’s production.”

In those instances where contract objectives involve higher risks or uncertainties (i.e., new technology development) buyers prefer to execute longer term contracts. Buyers perceive these longer term contracts afford suppliers opportunity to achieve process or technology stabilization. Suppliers also use contract duration as a primary mechanism to mitigate risks. While both buyers and suppliers view longer term contracts as an appropriate approach for addressing risk and uncertainty, some buyers suggest contract structure (i.e., terms and conditions of payment) may better address this risk.

The contract duration desired by suppliers is one which sufficiently supports firm-specific objectives, including those objectives tied to certain elements of risk. In order for suppliers to make significant investment, they suggest the optimal contract duration is greater than three years, ideally five to seven years. Without longer-term contracts, suppliers are exposed to unacceptable levels of risk which may prohibit supplier-side investment.

### **3.7 Implications for Public/Private Partnerships**

In public/private partnerships, long-term formal contracts serve as a bridge to supplier-side investment. Public agencies may face contract policy limitations which would prevent execution of buyer-supplier contracts of sufficient duration to support this investment. As referenced at the beginning of this article, buyers may perceive suppliers as opportunistic, advantage seeking agents or as cooperating partners. Given the critical importance of the current public agency budget crisis, and based upon our research findings, we recommend buyers seek to collaboratively develop contracts with key suppliers to identify ways to reduce buyer-side costs. In turn, suppliers should seek opportunities to engage with public agency buyers, contracting officials and administrators with the intent of sharing their supplier-side perspectives and lessons learned. Buyers and suppliers should work together to develop strategic policy approaches which will minimize buyer- and supplier-side risks and at the same time reduce buyer-side costs.

An essential element to successfully achieving buyer-side cost reductions is the recognition that suppliers have the ability to drive down contract related costs. This may

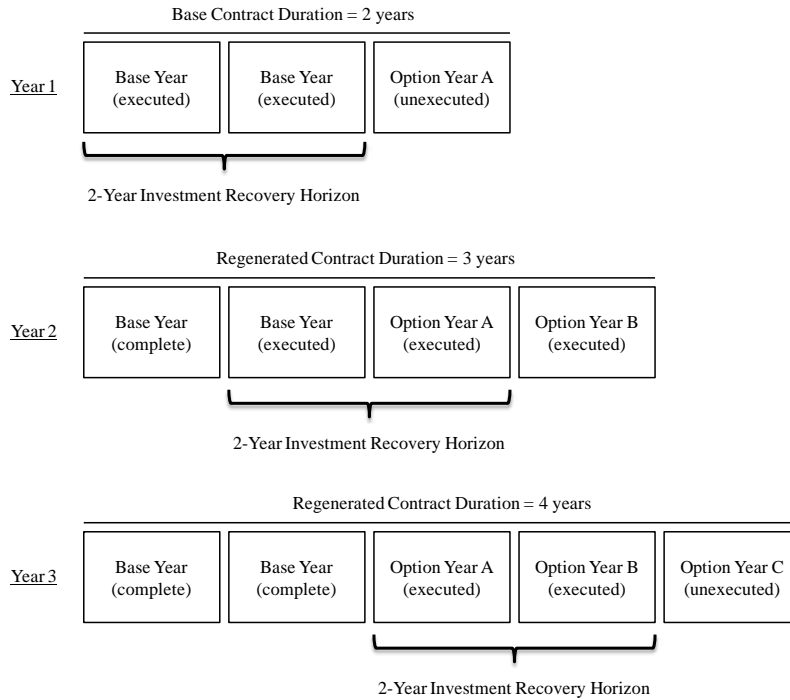
be achieved in several ways, including supplier-side investment in process and/or technology improvements which in many public/private partnerships are contract- or customer-specific improvements. From the supplier's perspective, consideration of these potential investments is predominantly tied to achievement of contract performance objectives. If the focus is on reducing buyer-side costs, efforts should be made to work with the supplier to address the question, "what contract structure and duration will best facilitate achievement of the contract objectives and at the same time reduce our agency's overall costs?" Working through these types of questions should enable buyers and suppliers to align expectations and minimize buyer- and supplier-side costs.

In public/private partnerships, buyers and suppliers may have competing financial objectives. Buyers may seek to minimize expenditure of tax payer dollars while suppliers may seek to achieve contract-specific profitability targets. We suggest both positions may be achieved through a shared understanding of perceived risks and the disclosure of supplier-side costs and expected profitability. This risk-reward approach may enable buyers to execute contracts of sufficient duration to facilitate the supplier-side investments necessary to reduce buyer-side costs, meet or exceed contract performance objectives and achieve supplier profitability targets.

Our research findings suggest a risk-reward approach may be difficult in light of the apparent disconnect between buyer and supplier views concerning short-term contracts. Buyers stated that short-term contracts serve to expand the supplier base, increase competition and reduce buyer-side costs. In contrast, suppliers perceive short-term contracts as more expensive and as impediments to supplier side investment which, if made, could significantly improve their ability to achieve contract performance

objectives and reduce buyer-side costs over time. Our research findings suggest there may be a way to bridge this different view points while leveraging short-term contracts to encourage supplier-side investment and achieve performance and cost reduction objectives. The approach involves a series of short-term contracts, one base period and multiple regenerating option periods (where a new option period is added each time an option period is executed). This approach extends the duration of an initial single-period contract to a total of five years or more, the duration suggested by suppliers as being sufficient to support supplier-side investment and the investment recovery.

Figure 7 illustrates this approach using a base contract duration of two years with multiple regenerating one year options. Base contract durations can be extended or compressed in order to comply with current government purchasing regulations, but the overall regeneration concept can still be applied. While some suppliers treat the base duration contracts themselves as the recovery investment period (while ignoring future option years that haven't been exercised), other suppliers view the entire base duration contract and the option years (even though unexercised) as being the investment recovery period due to the high rate at which such options have historically been exercised. However, as a caveat, past public agency buyer behavior may not be indicative of future behavior in terms of the frequency in which options may be exercised in a constrained budgetary environment.



**Figure 7 - Regenerating Contract Approach**

An approach like that illustrated in Figure 7 may create the environment necessary for suppliers to make investment commitments. We accept that this approach may not be feasible if the recommendations and suggestions outlined above in this section are not also considered. Buyers and suppliers should consider the advantages and disadvantages of this approach, as well as the implications to buyer-side contract policy and supplier-side investment positions.

Suppliers engaged in public/private partnerships should seek opportunities to examine intra-firm financial and risks tolerance strategies in light of the on-going cuts to public agency funds. The case for longer term contracts can be made if there is clear evidence provided by suppliers which indicates contracts in excess of three years are an essential element in achievement of both buyer- and supplier-side objectives.

### **3.8 Future Research**

Building upon the propositions presented in this article, there appears to be a need to further examine similarities and differences between public/private partnerships and buyer-supplier partnerships existing completely within the private sector. This may uncover dissimilarities between public/private partnerships and those supply chain relationships, partnerships and alliances addressed in the current supply chain literature. Additionally, our research findings suggest the need for researchers to consider the following question, “does a lack of supplier-side investment due to contract duration constraints cause buyers to consider insourcing those operations so that they can make the necessary investments themselves?” Lastly, we suggest focus be given to the effect insourcing will have on public/private partnership and contract relationships in the future.

## 4.0 Academic Paper #2 – Buyer Beware: Nearshoring, Reshoring and Insourcing —Moving Beyond the Total Cost of Ownership Discussion

### 4.1 The Location Specific Manufacturing Shift

For nearly 35 years, U.S. manufacturers have leveraged outsourcing as a predominant business strategy. In its infancy, outsourced manufacturing was seen as a way to minimize or eliminate those manufacturing functions which the focal firm did not consider a core competency or which did not directly add to the firm's competitive advantage in the market. In more recent years, executives have viewed overseas

outsourced manufacturing as a strategic approach for decreasing labor-related costs in the production of components, commodities and end items. While core competency and competitive advantage remain important focus areas, labor costs in overseas manufacturing markets are increasing and many firms are

evaluating opportunities to relocate manufacturing nearer to, or even within, the U.S. As location-specific manufacturing begins to shift from overseas outsourcing toward nearshoring, reshoring and insourcing (Figure 8), manufacturing and supply chain executives may find themselves facing very difficult relocation decisions. The outcome of any manufacturing relocation decision may systematically alter the focal firm's global manufacturing and supply chain strategies.

Over the last three decades, outsourcing has been exhaustively studied by industry professionals and academic researchers alike. Collectively they have developed

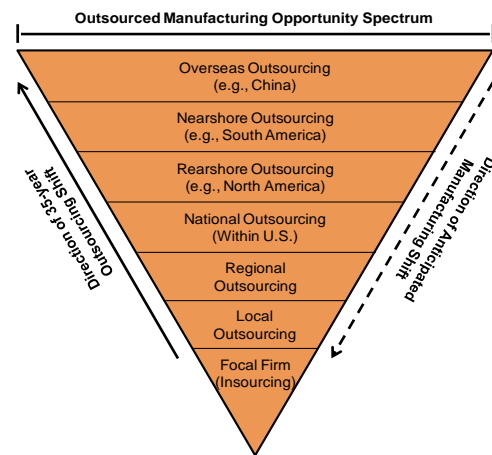


Figure 8 - The Outsourcing-to-Insourcing Shift



comprehensive answers to the ‘why?’, ‘how?’, ‘what?’, ‘where?’ and ‘when?’ outsourcing-related questions.<sup>1</sup> The outsourcing-to-insourcing manufacturing shift will also provide abundant opportunities to address these same questions from different perspectives in the years ahead. Unfortunately for today’s decision makers, there are very few industry-specific ‘lessons learned’, and even fewer academic journal articles they can reference to help guide them through the myriad of manufacturing and supply chain complexity issues they will undoubtedly face as the anticipated manufacturing shifts occur.

Over the last year we have worked with several large, mid-size and small manufacturing firms to gain an in-depth understanding of the critical information needed by senior decision makers prior to entering into a manufacturing relocation decision.<sup>2</sup> We have prepared this as an initial information framework for decision makers, regardless of where they are in their relocation decision making process. Our findings will benefit those firms just beginning to discuss options for relocating manufacturing functions as it will help them identify critical pre-decision information gaps. However, we also know this: this information is late to need if a firm is already fully engaged in relocating its outsourced manufacturing functions. We know this to be true based on the number of firms who shared with us that the information they based their relocation decision

1. For example see Hatonen, J. and T. Eriksson (2009), “30+ Years of Research and Practice of Outsourcing – Exploring the Past and Anticipating the Future,” *The Journal of International Management*, Vol. 15, pp. 142-155.

2. We would like to thank the following firms for their support of this study: AeroJet, American Axel Manufacturers, Cox Manufacturing, Deere & Company, E&R Industrial, Evenflo, M2 Global Technologies, PEPSICO, Pratt & Whitney, Sulzer Metco, The Triumph Group, and Westinghouse.

on was incomplete at best, producing outcomes that did not position the firm to achieve its initial near-term cost reduction or efficiency improvement targets.

We also recognize there may be firms who are relatively new to the ‘manufacturing renaissance’ discussion.<sup>3</sup> As Charles Fine (2000)<sup>4</sup> identified, industry business cycles are dynamic and there identifiable mechanisms which force industries to change over time. Fine’s research centers on the speed at which supply chain evolution occurs in industry. His findings provide insight into the foundational principals of supply chain design concerning outsourcing and equally apply to the manufacturing relocation shift of nearshoring, reshoring and insourcing. For those firms entering into the discussion, it appears this information will support any firm-level effort to develop a strategic approach for evaluating current outsourced manufacturing relationships and help position the firm for success in any future manufacturing relocation decisions.

## **4.2 The Decision Maker’s Challenge**

Making executable and supportable decisions concerning outsourced manufacturing functions requires decision makers to evaluate a broad spectrum of information. In considering opportunities to shift or relocate outsourced manufacturing, access to information is critical. We found the information used by decision makers whose managers were directly involved in the outsourced manufacturing functions and upstream supply chain structures was much more accurate and complete than the information used by firms who predominantly focused only on cost-related factors.

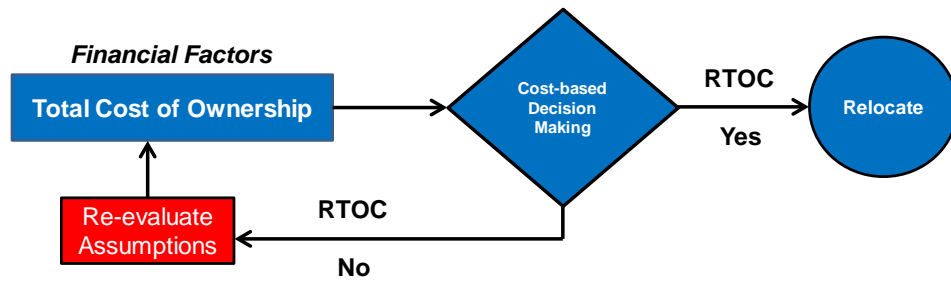
3. For example see B. McMeekin and E. McMackin, “Reshoring U.S. Manufacturing: A Wave of the Present,” September 2012, BusinessClimate.Com

4. Fine, Charles H. (2000), “Clockspeed-based Strategies for Supply Chain Design,” *Production and Operations Management*, Vol. 9, No. 3, pp 213-221.

We also discovered a high degree of inconsistency associated with the inclusion of process complexity factors as critical information inputs needed by decision makers prior to beginning the manufacturing relocation decision making process. In several cases we reviewed, the importance of considering process complexity factors, in addition to financial factors, was not discovered until late into the relocation decision making process or worse, after the relocation decision had been made. It is for this reason that we suggest the need for firms to move beyond the total cost of ownership (TCO) discussion when considering nearshoring, reshoring or insourcing options.

TCO, as generally applied, includes cost-related elements of interest which can be quantified and traced directly to a specific cost allocation strategy. Some TCO models may include upwards of 20 or 30 different data elements which are required in order to populate the full model. For large firms, with experienced staffs qualified to create the objective financial data or develop assumption-driven financial data, running full-scale TCO models may be appropriate.<sup>5</sup> TCO models can also be tailored and many mid-size and small firms tailor their TCO model in order to create high-level cost comparisons. This normally includes costs allocated to overhead, fixed plant and equipment, labor (direct and indirect), inventory (e.g. acquisition and carrying costs), distribution and transportation, and cash-to-cash cycle times. In either case, cost-based decision making looks for opportunities which afford the firm the ability to recognize a reduction in total ownership cost (RTOC). If the initial model output does not produce an acceptable RTOC, firms may re-evaluate TCO assumptions and re-run the model.

5. For example see Ellram, Lisa and Arnold B. Maltz (1995), "The Use of Total Cost of Ownership Concepts to Model the Outsourcing Decision", *The International Journal of Logistics Management*, Vol 6, No. 2, pp 55-66.



**Figure 9 – Cost-based Decision Making Approach**

In addition to financial factors, including the re-evaluation of modeling assumptions, firms needed accurate and complete information about the outsourced manufacturer’s manufacturing and supply chain processes. Firms identified the need to access process-related information in order to fully evaluate the ‘as-is’ manufacturer against any ‘to-be’ relocation opportunity.

The challenge for decision makers is to determine what financial and process complexity factor information is needed and then to select the best approach for obtaining the information given the relationship between the focal firm and the outsourced manufacturer. In hindsight, determining that evaluating financial factors alone was insufficient, firms recognized the key question that needed to be addressed prior to entering into the relocation decision process was, “how much information do we have about our current manufacturer’s costs, manufacturing processes and supply chain structure?” Without this information, embedded manufacturing and supply chain structure complexities often adversely affected the evaluation outcome and ultimately the achievement of near-term cost savings, productivity and quality improvements, and the firm’s ability to achieve internal or customer-driven performance targets. This is best exemplified by one decision maker’s statement,

It was a selection criteria mistake early in the process. We made the decision without understanding all of these things. We went to a new supplier that had never done (manufactured) the products...we went to them because of costs and at the end of the day neither the design nor the manufacturing ability was there to do it economically and it was a huge mess for both of us. (Senior Manager, Research Participant, Anonymity Requested)

Throughout our analysis of relocation decision making processes, it became increasingly clear to us that firms lacked a detailed understanding of the process complexities embedded in their outsourced manufacturing relationships. This lack of understanding limited the decision makers' ability to identify and then obtain the information needed to fully evaluate the spectrum of manufacturing relocation options.

#### **4.3 Reacting to Trigger Events**

The need to produce near-term results often serves as the mechanism for change. For example, we did not find evidence that firms have fully embraced nearshoring, reshoring and insourcing as a corporate strategy. Instead, in each and every case there was a unique trigger event which caused the firm to begin discussing the possibility of relocating the outsourced manufacturing function. The primary drivers for relocating outsourced manufacturing workload most often referenced were cost reduction, quality improvement, and productivity improvement. Example triggers cited included unanticipated costs increases from the manufacturer, inability of the manufacturer to consistently meet quality and delivery standards, and the need to improve the firm's internal equipment and capacity utilization to better distribute overhead costs.

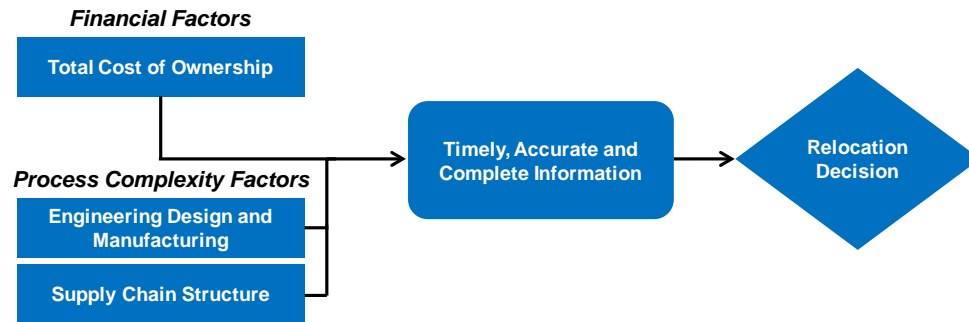
Because the relocation decision making process began as a response to a trigger event, superficial and easily obtainable financial or cost-related factors often served as the primary criteria to evaluate relocation options. In our discussions with senior decision makers, we discovered that there were very few who had access to complete information concerning the complexities of existing outsourced manufacturing functions. This further supports our conclusion that many of these relocation decisions were near-term reactions to one or more trigger events and not part of a strategic manufacturing relocation plan where financial factors and process complexity factors should have been developed and evaluated. It was these insights which lead us to create an information flow framework that identifies critical information flows associated with financial and process complexity factors.

#### **4.4 Critical Information Flows**

Our findings support development of financial factors using TCO modeling, full or tailored depending upon the firm's unique requirements.<sup>6</sup> However, as stated earlier, financial models alone have proven insufficient for identifying the hidden costs associated with engineering design and manufacturing, and supply chain structure complexity factors. We illustrate these critical information flows in Figure 10 where we incorporate financial factors and process complexity factors in parallel. Here we are suggesting independent development and analysis of financial and process complexity factors but also recognize that there are linkages between these overarching factors.

6. For example see The Reshore Initiative at [http://www.reshorennow.org/TCO\\_Estimator.cfm](http://www.reshorennow.org/TCO_Estimator.cfm)

These linkages need to be formalized into a single information flow to ensure decision makers have timely, accurate and complete information prior to any manufacturing relocation decision.



**Figure 10 – Financial and Process Complexity Factors**

#### **4.5 How You Got In May Determine How You Get Out**

Experience garnered from participating firms has shown that process-unique complexities must be considered by decision makers. Obtaining process complexity information may prove to be a time consuming and difficult task. We discovered that a firm's access to process complexity information heavily depends on three factors:

- 1) Type of firm-manufacturer relationship in place
- 2) Firm's ability to control or influence specific process elements within the relationship
- 3) Duration and quality of the focal firm-manufacturer relationship

At its height of appeal as a business strategy, firms entered into outsourced manufacturing relationships expecting to recognize immediate benefits (e.g., lower production costs). Many of these relationships were developed focusing on near-term

objectives and, therefore, the focal firm may not have considered the strategic implications of their relationship development decision. In many cases, the type of relationship formed directly affected the firm's ability to access process-unique information needed as a baseline for evaluating the 'as-is' outsourced manufacturer against any 'to-be' manufacturing relocation opportunity. Although each firm–manufacturer relationship is unique, we have generalized our findings in order to support a broad application of interests. We have included general examples and supporting details provided by participating firms which are not specifically attributed at the request of the participating firms to provide anonymity.

#### **4.6 Process Control and Information Access**

We have identified three primary types of outsourced manufacturing relationships and have generalized the focal firm's degree of control or influence over areas such as design, engineering and manufacturing, quality standards and costs for each relationship. We discuss each relationship type and the implications of the firm's degree of process control or influence on their ability to access process complexity information. The framework should assist decision makers in their efforts to identify, understand and evaluate specific manufacturing process element complexities which may impact the manufacturing relocation decision.

We introduce the framework in Table 6 representing the focal firm's general 'as-is' position of control or influence in the three outsourced manufacturing relationships: Custom Manufacturing, Customization of Standardized Products, and Standardized Products. The underlying characteristic of the three relationships is that of asset



specificity. From the focal firm's perspective, as asset specificity decreases so also does the focal firm's degree of control or influence over manufacturing process elements within the relationship. As a result, the focal firm becomes much more reliant upon its relationship with the outsourced manufacturer to obtain the detailed information needed to support the manufacturing relocation decision making process.

**Table 6 – The Focal Firm-Outsourced Manufacturer Relationship**

<i>Relationship Type</i>	<i>Custom Manufacturing</i>		<i>Customization of Standardized Products</i>		<i>Standardized Products</i>	
<i>Engineering Design and Manufacturing Process Elements</i>	<i>Degree of Control or Influence</i>		<i>Degree of Control or Influence</i>		<i>Degree of Control or Influence</i>	
	<i>Focal Firm</i>	<i>Manufacturer</i>	<i>Focal Firm</i>	<i>Manufacturer</i>	<i>Focal Firm</i>	<i>Manufacturer</i>
Product Design	[Green]		[Green]	[Red]	[Red]	
Engineering Specifications	[Green]		[Green]	[Red]	[Red]	
Manufacturing Specifications	[Green]		[Green]	[Red]	[Red]	
Manufacturing Processes	[Green]		[Green]	[Red]	[Red]	
Manufacturing Standards or Metrics	[Green]		[Green]	[Red]	[Red]	
Production Quality Control Metrics	[Green]		[Green]	[Red]	[Green]	[Red]
IT Integration Strategies	[Green]		[Green]	[Red]	[Green]	[Red]
Workforce Capabilities	[Green]		[Red]		[Red]	
Unit Level Costs	[Green]		[Green]	[Red]	[Green]	[Red]
<b>Firm Perspective</b>	<b>(+) &lt;-----Asset Specificity-----&gt; (-)</b>					

#### *4.6.1 Custom Manufacturing*

This relationship is developed between the focal firm and an outsourced manufacturer for the purpose of having a manufacturer produce a component or end-item in accordance with the focal firm's specific product design, engineering specifications, manufacturing specifications, and preferred manufacturing processes. For each of these elements, the focal firm may afford some consideration to the outsourced manufacturer based on the manufacturer's unique equipment or facility capabilities. Even as this consideration is given, the focal firm retains a very high degree of control or influence

over the manufacturing standards or metrics, and production quality control metrics. This control or influence may be extended through the relationship duration and is more formally exercised as part of the focal firm's first article testing and final product acceptance procedures.

In the custom manufacturing relationship, the focal firm's ability to control or influence the outsourced manufacturer's information technology (IT) integration strategy is somewhat limited to the degree the manufacturer is willing to modify its internal IT and data architecture. The manufacturer may facilitate integration with the focal firm in order to electronically exchange design, engineering or manufacturing specifications during the course of the relationship. The manufacturer may also make IT architecture modifications to electronic data interchange (EDI) capabilities to support integration with the focal firm's demand forecasting, in-transit visibility and/or payment systems.

Workforce capabilities may be influenced by the focal firm in terms of directing the manufacturer to utilize personnel with specific skill-levels or certifications in the manufacturing and production process as a condition of the relationship. This relationship type also affords the focal firm the greatest degree of control or influence concerning unit level costs. The focal firm has a higher degree of positional power in terms of negotiating workforce capabilities and unit level costs than the outsource manufacturer entering into the relationship if there is an acceptable level of qualified competition in the manufacturing market.

On the surface, based on the focal firm's degree of control or influence, it would appear the focal firm–custom manufacturer relationship leaves little to address concerning process complexity factors. The focal firm has a significant position of

control throughout the relationship period and should have all information needed to support the manufacturing relocation decision. Except for limited considerations, the focal firm should have a detailed understanding of all process complexity factors and access to pertinent information needed to support evaluation of manufacturing relocation options. However, our study exposed the focal firm–custom manufacturer outsourced manufacturing relationship as one that is most likely to cause significant difficulty in successfully relocating manufacturing workload. There were two primary findings which were discovered by firms late into the relocation decision making process that support this conclusion:

Finding One. Focal firms did not have an awareness of the degree to which the outsourced manufacturer had absorbed manufacturing-related costs (i.e., scrap and re-work) in order to meet the focal firm’s quality and costs objectives. So although the focal firm’s degree of control or influence was significantly higher than that of the outsourced manufacturer, once first article testing was completed the focal firm relied primarily on performance metrics such as costs, schedule and quality which did not provide any level of detail into the actual manufacturing and production processes.

Finding Two. Focal firms were not aware of the degree to which their outsourced manufacturers had become reliant on the use of non-standard processes (e.g., manufacturing or production ‘work-arounds’) in order to minimize manufacturing costs and maximize profits. The use of non-standard processes has often been referred to ‘hidden factories’ in the Lean / Six Sigma literature to address the difference between actual versus stated or perceived processes.

It is important to note that neither of these major issues would have been captured as information inputs if the focal firm's decision making process was primarily dependent upon financial models. More importantly, these are examples where the focal firms believed they had all of the information needed going into the decision making process because they believed their degree of control or influence in the relationship provided them information access. As a result the information used by decision makers in the evaluation of relocation opportunities was still inaccurate and incomplete.

#### **4.6.2 Customization of Standardized Products**

In the second relationship the focal firm engages with a manufacturer of standardized products from which the focal firm seeks to customize one or more of the products in the manufacturer's product portfolio. There are, of course, varying degrees of customization which could occur. As the degree of customization increases (i.e., increased asset specificity), the focal firm achieves a higher degree of control and influence in the relationship. While the manufacturer owns the foundational product design, engineering specifications, etc., it is the focal firm's customization of the standardized product(s) which affords it a limited degree of control and influence over the range of process elements.

In comparing this relationship to custom manufacturing, we see the manufacturer relinquishes varying degrees of control as necessary to support the focal firm's objectives to achieve desired design, engineering and manufacturing, and quality specifications. The focal firm has a decreased degree of control over quality standards and unit-level costs are viewed as a shared or negotiated position. As we have suggested for the focal

firm-custom manufacturing relationship, a detailed analysis of the end-to-end engineering and manufacturing processes, including standards / metrics, should be incorporated into the information flow. Additionally, information concerning the approach taken by the focal firm to negotiate quality and costs thresholds should also be incorporated. With this inclusive approach, decision makers will have a more accurate and complete understanding of the outsourced manufacturer's engineering, manufacturing, quality and costs elements associated with the focal firm-customization of standard parts outsourced manufacturing relationship.

One of the challenges the focal firm may face in its efforts to evaluate relocation opportunities is its limited access to the manufacturer's foundational product design, engineering and manufacturing specifications, and production processes. Ideally, this information would have been obtained prior to entering into the relationship as part of the initial evaluation of the manufacturer or in the early stages of the relationship as associated with the focal firm's limited degree of control or influence over the process elements. Regardless of how the information was obtained, the timeliness and accuracy of the information is important to the relocation decision and this information may have changed over time. It is difficult for decision makers to evaluate tomorrow's relocation opportunities if the information included in the 'as-is' basis of comparison is dated.

Finding. A focal firm had outsourced manufacturing of a partially customized subassembly and, through the course of the relationship, had made a significant time investment in working to improve the outsourced manufacturer's production processes which the focal firm believed were resulting in unacceptable quality deficiencies. The

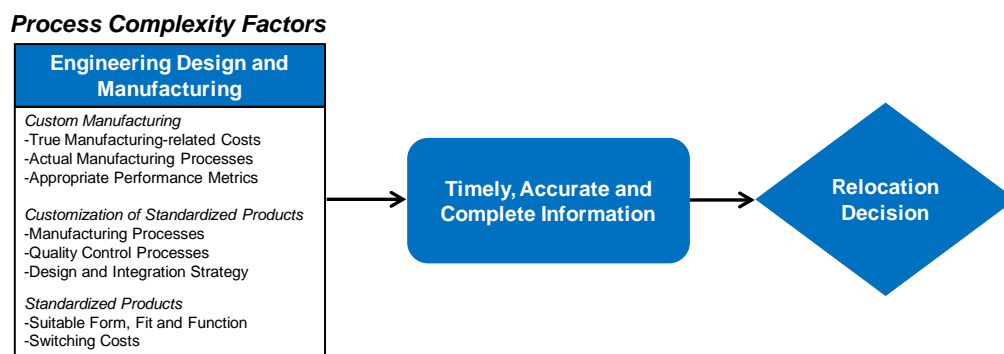
quality of the subassembly was improved over time yet still did not meet the focal firm's standard. The work was subsequently moved to another manufacturer who also produced the foundational product. The second manufacturer faced the same production-related quality challenges and the focal firm again made a significant time investment working with the manufacturer to improve the quality of the subassembly. The relocation decision did not include the possibility that another manufacturer may also be challenged to meet the focal firm's quality objectives. As one executive discussed, "...just because outsourced supplier X has a problem and supplier Y can manufacture the same product, don't assume supplier Y can fix the problem." The relocation decision resulted in the same quality-related issues and the focal firm did not achieve its near-term cost or quality improvement objectives. It was not until the focal firm had made a significant time investment with the second manufacturer that the production-related issue was determined to be a design and integration problem.

#### **4.6.3 Standardized Products**

Here an outsourced manufacturer primarily produces standardized products which are sold under one or more brands into multiple markets. The outsourced manufacturer is responsible for product design, engineering and manufacturing specifications, and controls its own production processes and quality standards. The focal firm evaluates the manufacturer's products and, based on pre-determined quality and price targets, selects those products from the manufacturer's product portfolio which will be labeled and sold under the focal firm's brand. Market conditions may determine the degree to which the manufacturer will release partial control over quality and costs in so much as is needed to

secure the focal firm's business. For this type of outsourced manufacturing relationship, the focal firm may have received information concerning the outsourced manufacturer's design, engineering and manufacturing, and quality control processes as part of its initial manufacturer evaluation process. If this detailed analysis was not accomplished, our findings suggest that this information should be obtained and included as a critical information flow into the relocation decision making process. However, if there is a sufficient number of qualified manufacturers of the standardized product (i.e., suitable form, fit and function properties), and switching costs are low, price/costs comparisons for standardized product manufacturers may be sufficient to support a manufacturing relocation decision.

Figure 11 captures the primary engineering design and manufacturing process complexity factors discussed for each of the three focal firm-manufacturer relationships presented. Managers should develop 'how?' and 'why?' questions for each complexity factor then work with their outsourced manufacturing providers to address each question.



**Figure 11 – Engineering Design and Manufacturing Complexity Factors**

## 4.7 Supply Chain Structure

In addition to the need for decision makers to consider engineering design and manufacturing complexities, we also identified the complexity of the outsourced manufacturer's supply chain structure as a critical information flow which must be considered. The focal firm's ability to control or influence supply chain structure is also linked to the focal firm-manufacturer relationship type.

The second category of process complexity factors addresses the structure of the outsourced manufacturer's upstream supply chain. As has been well documented, multi-tiered upstream supply chain structures become more complex the longer they are in place and tend to add significant costs to manufacturing processes (Bozarth *et al.*, 2009).<sup>7</sup> Study participants identified cost reduction as a primary driver for relocating outsourced manufacturing workload. However, without insight into the manufacturer's supply chain structure and an understanding of supply chain-driven costs, decision makers do not have a sufficient level of information to correctly evaluate current outsourced manufacturing workload against the spectrum of relocation opportunities. Information concerning the evolution of the manufacturer's supply chain structure and how this evolution may have affected production quality and manufacturing costs over time should be identified as a critical information flow into the decision making process. Here again, consideration of financial factors alone would not provide decision maker's insight into the upstream supply chain structure's potential cost-drivers and risks.

7. See Bozarth, Cecil C., Donald P. Warsing, Barbara B. Flynn, and E. James Flynn (2009), "The impact of supply chain complexity on manufacturing plant performance," *Journal of Operations Management*, Vol. 27, pp 78-93.



**Table 7 – Influencing the Manufacturer’s Supply Chain Structure**

<i>Relationship Type:</i>	<i>Custom Manufacturing</i>		<i>Customization of Standardized Products</i>		<i>Standardized Products</i>	
<b>Supply Chain Structure Elements</b>	<b>Degree of Control or Influence</b>		<b>Degree of Control or Influence</b>		<b>Degree of Control or Influence</b>	
	Focal Firm	Manufacturer	Focal Firm	Manufacturer	Focal Firm	Manufacturer
Overall Supply Chain Performance						
Supplier Selection						
Supplier Performance						
Material Quality						
Material Costs						
Inventory Strategy						
<b>Firm Perspective</b>	<b>(+) &lt;-----Asset Specificity-----&gt; (-)</b>					

As shown in Table 7 above, the focal firm’s ability to control or influence the manufacturer’s supply chain structure is again a function of asset specificity. The importance of understanding the focal firm’s influential position concerning the supply chain structure is tied to the ability to ‘lift and shift’ supplier relationships as part of the manufacturing relocation decision. In the focal firm-custom manufacturing relationship, the focal firm has considerable control over the engineering design and manufacturing process elements. This degree of control positions the focal firm to influence material quality, material costs and the overall inventory strategy within the manufacturer’s supply chain structure. To a lesser degree, the focal firm has the ability to influence overall supply chain performance, supplier selection and supplier performance. The focal firm’s ability to control or influence the supply chain structure decreases as the level of asset specificity decreases, to the point where the focal firm has very little control with the focal firm-standardized products relationship. For this relationship type, any ability of the focal firm to control or influence the supply chain structure may be limited to quality

evaluation and acceptance of lot quantity shipments and an agreed upon inventory strategy to meet the focal firm's product delivery requirements.

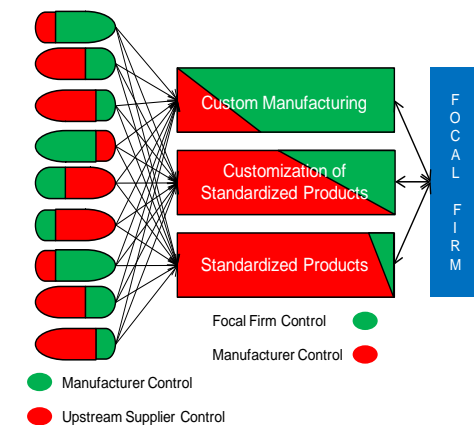
Another level of supply chain structure complexity is associated with the type of relationships the manufacturer has developed with its suppliers. As with the focal firm, manufacturers may also be engaged in custom manufacturing, customization of standardized products, and standardized products relationships. As indicated in Figure 12, each multi-tiered relationship structure must be considered and evaluated by the focal firm in order to identify potential cost-drivers or risks within the manufacturer's upstream supply chain structure. These potential cost-

drivers and risks, along with mechanisms to mitigate each, should be carried forward as information flows into the manufacturing relocation decision making process.

Without the ability to control or influence

the upstream supply chain structure, gaining

access to information about the various supply chain elements may prove difficult.



**Figure 12 - Upstream Supply Chain Structure Complexity**

## **4.8 Managing Your Way To Information Access**

We found there are four primary ways focal firms obtain access to manufacturing process and supply chain structure complexity information. Toyota, through its focus on supplier relationship development within Toyota Production System (TPS), may best exemplify the importance of developing supplier relationships.<sup>8</sup>

### **4.8.1 The Handshake: Developing quality relationships with manufacturers**

Access to timely, accurate and complete information is made easier when the focal firm's managers are involved in, not informed of, the manufacturer's processes. Examples of how this can be accomplished would include assignment of one or more focal firm employees to work directly with the manufacturer beginning in the early stages of the relationship and carrying these same relationships forward through the design, manufacturing, production and delivery life-cycle.

### **4.8.2 The Stick: Leveraging the control or influence over processes**

This management approach relies on the focal firm's ability to use positional power to control or influence manufacturing processes and actively participate in upstream supply chain structure processes. Since the firm's ability to control or influence processes is significantly diminished as asset specificity decreases, the firm may be able to engage in power trade-offs with the manufacturer in order to access critical information.

8. Morgan, J. M., & Liker, J. K. (2006). *The Toyota product development system*. New York: Productivity Press. (pp 199)

#### **4.8.3 The By-pass: Development of relationships with upstream suppliers**

If the focal firm has not successfully developed quality relationships with its manufacturers, and power trade-offs have not been produced desired results, the firm may need to develop relationships with upstream suppliers. The primary purpose of developing these relationships is to obtain access to manufacturing process and supply chain structure elements needed to support the manufacturing relocation decision making process. Secondary motives for developing these relationships could include the firm's desire to transition the upstream supplier(s) into the relocation supply chain structure. Regardless of the rationale, relationships with upstream suppliers provide critical insights into supply chain performance attributes needed to inform the relocation decision.

#### **4.8.4 The Benchmark: Leveraging relationships with manufacturers (and suppliers) known to use similar processes**

In the absence of information specific to the focal firm-manufacturer relationship, manufacturing and supply chain structure information may be obtained through development of relationships with other firms who have outsourced manufacturing workload. Inter-organization strategy sessions may afford the focal firm access to outsourcing manufacturers who perform similar manufacturing functions and provide the focal firm an opportunity to develop various 'as-is' scenarios to fill information voids in the financial and process complexity factor information flows.

#### **4.9 More Than The Bottom Line**

The importance of incorporating information concerning the engineering design and manufacturing, and supply chain process complexity factors into the relocation decision making process cannot be overstated. Without this information, the focal firm has little certainty that the relocated manufacturing processes will achieve the desired outcomes of reducing cost, or improving quality and productivity. This insight further supports the need for buyers to move beyond the TCO discussion and work with their outsourced manufacturers to obtain timely, accurate and complete information prior to entering into a manufacturing relocation decision making process. The question decision makers need to ask is, “what data and information do you have for me to consider on the outsourced engineering design and manufacturing processes?” Decision makers should not be alarmed that the answers provided may be incomplete and that current relationships with manufacturers may not support information access. Our findings suggests very few firms have complete information going into the decision making process. Unless there is an urgent requirement to get to a relocation decision, we would encourage decision makers to delay the decision making process. A fully informed relocation decision made tomorrow may prove more beneficial to the long-term bottom line than a partially informed decision made today. A structured delay may ensure decision makers have timely, accurate and complete information needed to support achievement of the firm’s manufacturing relocation objectives.

## **5.0 Academic Paper #3—An Empirical Investigation of the Manufacturing Outsourcing-to-Insourcing Antecedents**

### **5.1 Abstract**

This research utilizes semi-structured interviews completed with senior executives and managers from 12 firms in the manufacturing industry to examine the level of perceived influence 23 different factors may have on manufacturing relocation decisions. Additionally, 14 specific insourcing cases are evaluated to determine if firm-level perspectives of factor influence are consistent with those influential factors identified as having the most significant levels of influence on the insourcing decision. The theoretical themes of transaction cost economics (TCE) and the resource-based view (RBV) of the firm are evaluated against the primary factors identified as having the most significant influence on outsourcing-to-insourcing manufacturing relocation decisions. Research propositions are developed based on the results and future research directions are addressed.

Key words: outsourcing, insourcing, influential factors, manufacturing relocation

## 5.2 Introduction

There has been an increasing interest in the use of qualitative case studies as an alternative to survey-based research to empirically address current trends in operations management (Gray *et al.*, 2013; Barratt, 2011; Stuart *et al.*, 2002). It would be difficult at this early stage to suggest the manufacturing relocation shift (i.e., nearshoring, reshoring, and/or insourcing) has become a trend. However, there is an undeniable focus on revitalizing the U.S. manufacturing sector and for academic researchers to make value-added contributions to this outcome (Gray *et al.*, 2013). Much of the current focus within the practitioner communities has centered on re-addressing firm-level decisions to outsource manufacturing functions to overseas locations. However, to date, there is an absence of academic research published which addresses this impending relocation shift. Academic research which includes the perspective of practitioners is needed to help shape and guide the outsourcing-to-insourcing manufacturing relocation discussion. Furthermore, there has been no evaluation of existing theoretical constructs and their ability to address the outsourcing-to-insourcing manufacturing relocation shift.

The absence of academic literature addressing the outsourcing-to-insourcing manufacturing relocation shift is understandable. Outsourcing has served as a primary business strategy for U.S. manufacturers for more than three decades. In response, researchers have exhaustively studied the outsourcing phenomenon answering many of the ‘why?’, ‘how?’, ‘what?’, ‘where?’ and ‘when?’ questions (e.g., Hatonen and Eriksson, 2009). However, the prominence of outsourcing has begun to decline and many firms have cancelled outsourcing contracts or intend to insource functions as contracts expire (Gadde and Jonsson, 2007).

The evolutionary cycle of the study and practice of logistics has been well documented by authors such as Klaus (2009), Stock (2009), Charvet *et al.*, (2008), van Hoek (2001), and Ellram *et al.*, (1994). Each article brings forward a significant basis of knowledge and understanding of the past and, in some cases, establishes a foundation for the future of supply chain management thought. However, as Ellram (2013) states, “much of the supply chain focus on the manufacturing location decision has been subsumed to the outsourcing decision.” While there are few questions left to address concerning outsourcing, the impending outsourcing-to-insourcing manufacturing relocation shift may emerge as the new research frontier.

The long-standing focus on outsourcing has created an obvious void in the current operations and supply chain management literature. This empirical, qualitative case study research begins to fill the gap in the academic literature concerning the impending shift in sourcing decisions away from outsourcing toward nearshoring, reshoring and/or insourcing.

The purpose of this research is twofold. First, we provide a survey of the outsourcing literature addressing the primary influential factors considered by firms as part of a strategic outsourcing decision. Secondly, we evaluate these same influential factors in an attempt to answer our overarching research question:

*Which, if any, of the influential factors associated with outsourcing are also influential in the outsourcing-to-insourcing manufacturing relocation shift and why?*



Over the course of the last year, we have conducted interviews with senior executives and managers of 12 companies concerning the manufacturing relocation shift. As part of the interview process, we developed 14 specific case studies addressing the importance of influential factors in the decision to insource manufacturing functions and manufacturing support services. Our research approach utilizes the themes of transaction cost economics (TCE) (Williamson, 1985) and the resource-based view of the firm (RBV) (Barney, 1991) to provide the context of examination as called for by McIvor (2013). These themes are applied to the insourcing component of the manufacturing relocation shift, allowing us to present an evaluation of the influential factors and lessons learned. We conclude with a few managerial guidelines concerning firm-level evaluation of tactical, strategic and enabling influential factors which may impact future manufacturing relocation decisions.

### **5.3 A Review of the Literature**

As the manufacturing relocation shift is a new phenomenon, it was our intent to identify and analyze the factors influential in the context of outsourcing and use these factors as a starting point for gaining an understanding of the insourcing implications. Numerous researchers have captured the rationale, benefits and potential hazards of outsourcing. In our review of the outsourcing literature, we identified 23 factors which researchers have evaluated in the context of outsourcing. We have captured many of these contributions to the literature in Tables 8 and 9 below. Key elements of each of the 23 factors are identified immediately follow the tables.

We acknowledge that there may be additional factors which we have not captured here and, as such, present the contributions in Tables 8 and 9 as representative of the many factors which managers have and should consider as part of any manufacturing relocation decision. We provide this qualification in part due to the number of ‘outsourcing’ related journal articles published since the early 1960’s. For example, a simple query of ‘outsourcing’ on Google Scholar produces over 470,000 returns making it nearly impossible to fully evaluate all returns.

**Table 8 – Influential Factors (Factors 1-13)**

<i>1--Contract Strategy</i>	<i>8--Integration of Info. Technologies</i>
Hahn, et al., 1983; Helper, 1991; Gillet, 1994; Bryce and Useem, 1998; Momme and Hvolby, 2002; Li (Yuan) <i>et al.</i> , 2008; Handley and Benton, 2009; Mahapatra, Narasimhan and Barbieri, 2010	Richardson, 1990; Rogers, Dawe and Guerra, 1991; Sheombar, 1992; Richardson, 1993; Richardson, 1995; Williams <i>et al.</i> , 1997; Ferrari, 2001; Narasimhan and Kim, 2001; Coronado, 2003; Chen and Paulraj, 2004; Zacharia and Mentzer, 2004; Sahin and Robinson, 2005; Zhou, et al., 2011
<i>2--Cost Savings/Reduction</i>	<i>9--Just-in-Time Complexities</i>
Cavinato, 1989; Maltz, 1994; Rao and Young, 1994; Maltz and Ellram, 1997; Sink and Langley, 1997; Boyson <i>et al.</i> , 1999; Insinga and Werle, 2000; Quelin and Duhamel, 2003; Lieb and Bentz, 2005; Kakabadse and Kakabadse, 2005	Schonberger and Gilbert, 1983; Ansari and Modarress, 1986; Wemmerlov and Hyer, 1989; Benton and Shin, 1998; Carbone, 1999; Mentzer, 1999; Fullerton <i>et al.</i> , 2003; Zacharia and Mentzer, 2004
<i>3--Focus on Core Competence</i>	<i>10--Leverage Supply Chain Management</i>
Hubbard, 1993; Quinn and Hilmer, 1994; Rao and Young, 1994; Leahy, Murphy and Poist, 1995; van Damme and van Amstel, 1996; Razzaque and Sheng, 1998; McIvor and McHugh, 2000; Gottfredson <i>et al.</i> , 2005	Foster and Muller, 1990; Raia, 1992; Rao and Young, 1994; Bradley, 1995; Lieb and Randall, 1996; Levy, 1997; Liker and Choi, 2004; Choi and Krause, 2006; Handley and Benton, 2009
<i>4--Global Supply Chain Risks</i>	<i>11--Need for Expertise</i>
Chopra and Sodhi, 2004; Christopher and Peck, 2004; Blackhurst <i>et al.</i> , 2005; Mol, van Tuller and Beije, 2005; Wagner and Bode, 2008	Bradley, 1995; Harrington, 1995; van Damme and van Amstel, 1996; Sink and Langley, 1997; Bozarth, Handfield and Das, 1998; Razzaque and Sheng, 1998; Schniederjans <i>et al.</i> , 2005; Hoecht and Trott, 2006; Kroes and Ghosh, 2010
<i>5--Globalization of Business</i>	<i>12--Outsourcing Risks</i>
Leff, 1974; Monczka and Trent, 1991; Monczka and Trent, 1992; Byrne, 1993; Rao, Young and Novick, 1993; Murray, Wildt and Kotabe, 1995; Razzaque and Sheng, 1998; Aron and Singh, 1998	Alchian and Demsetz, 1972; Markides and Berg, 1988; Bettis, Bradley and Hamel, 1992; Quinn and Hilmer, 1994; Bradley, 1995; Levy, 1995; van Damme and van Amstel, 1996; Gilley and Rasheed, 2000; Barthelemy, 2003; Chopra and Sodhi, 2004; Aron and Singh, 2005; Blackhurst <i>et al.</i> , 2005; Mol, van Tulder and Beije, 2005; Handley, 2012
<i>6--Human Resources</i>	<i>13--Performance Consequences</i>
Dillon, 1989; Sheehan, 1989; Goldberg, 1990; Byrne, 1993; Wood, 1993; Quinn and Hilmer, 1994; Das and Teng, 2000; Eisenhardt and Martin, 2000; Helper, MacDuffie and Sabel, 2000; Lafferty and Roan, 2000; Barthelemy, 2001; Barthelemy, 2003; Holweg and Pil, 2008	Bozarth, Handfield and Das, 1998; Razzaque and Sheng, 1998; Narasimhan and Das, 1999; Gilley and Rasheed, 2000; Mol, van Tulder and Beije, 2005; Kroes and Ghosh, 2010
<i>7--Improve Productivity</i>	
Weber, Current and Benton, 1991; Richardson, 1993; Cooke, 1994; Leahy, Murphy and Poist, 1995; Lankford and Parsa, 1999	

**Table 9 – Influential Factors (Factors 14-23)**

<i>14--Proprietary Systems Profitability</i>	<i>20--Supply Chain Infrastructure Investment</i>
Willard and Savara, 1988; Prahalad and Hamel, 1990; Momme and Hvolby, 2002; Chopra and Sodhi, 2004; Weidenbaum, 2005; Narasimhan and Talluri, 2009	Bettis <i>et al.</i> , 1992; Hubbard, 1993; Meijboom and Vos, 1997; Bryce and Useem, 1998; Elmuti <i>et al.</i> , 1998; Das and Teng, 2000; Metters, 2008; Gray <i>et al.</i> , 2009; Kinkel and Maloca, 2009; Selviaridis and Spring, 2010; Speier <i>et al.</i> , 2011; Zacharia, Sanders, and Nix, 2011; Handley, 2012
<i>15--Quality</i>	<i>21--Supply Chain Integration</i>
Bozarth, Handfield and Das, 1998; Frohlich and Dixon, 2001; Zacharia and Mentzer, 2004; Kakabadse and Kakabadse, 2005; Mol, van Tulder and Beije, 2005; Kremic, Tukel and Rom, 2006; Nayak, Sinha and Guin, 2007; Tate, 2009; Kroes and Ghosh, 2010	Blenkhorn and Noori, 1990; Quinn, Doorley and Paquett, 1990; Ellram and Cooper, 1993; Novack, Rinehart and Langlely, 1994; Andraski and Novack, 1996; Narasimhan and Kim, 2001; Choi and Hong, 2002; Fawcett and Magnan, 2002; Das, Narasimhan and Tulluri, 2006; Holcomb and Hitt, 2007; Chen, Daugherty and Landry, 2009; Linktukungas, Peltola and Virolainen, 2009
<i>16--Rapid Growth</i>	<i>22--Technical Advances</i>
Maltz, 1995; van Damme and van Amstel, 1996; Narasimhan and Das, 1999; Frohlich and Dixon, 2001; Ten Raa and Wolff, 2001; Van Hoek, 2001; Lee, 2002; Holcomb and Hitt, 2007; Mukherji and Ramachandran, 2007; Nayak, Sinha and Guin, 2007; Kotabe <i>et al.</i> , 2008	Harrigan, 1985; Kotabe, 1992; Campbell, 1995; Bozarth, Handfield and Das, 1998; Gilley and Rasheed, 2000; Aron and Singh, 2005; Farrell, 2005; Kakabadse and Kakabadse, 2005; Kremic, Tukel and Rom, 2006
<i>17--Regulatory Change</i>	<i>23--Upgrade Information Technologies</i>
Sink and Langlely, 1997; Farrell, 2004; Stack and Downing, 2005; Weidenbaum, 2005; Li <i>et al.</i> , 2008; Metters and Verma, 2008; Palley, 2008; Javalgi <i>et al.</i> , 2009	Harrigan, 1985; Rogers, Dawe and Guerra, 1991; Leahy, Murphy and Poist, 1995; Lewis and Talalayevsky, 1997; Sink and Langlely, 1997; Buvik and John, 2000; Ferrari, 2001; Zacharia and Mentzer, 2004; Caputo and Palumbo, 2005; Gunasekaran and Ngai, 2005; Sahin and Robinson, 2005
<i>18--Service Improvement</i>	
Foster and Muller, 1990; Kotabe and Murray, 1990; Bardi and Tracey, 1991; Hubbard, 1993; Richardson, 1993; Quinn and Hilmer, 1994; Rao and Young, 1994; Bradley, 1995; Lieb and Randall, 1996; Sink and Langlely, 1997; Narasimhan and Jayaram, 1998; Krause, 1999; Gilley and Rasheed, 2000; Stanley and Wisner, 2001; Kremic, Tukel and Rom, 2006; Nayak, Sinha and Guin, 2007; Tate, 2009	
<i>19--Supplier Market Power</i>	
Kotabe and Murray, 1990; Venkatesan, 1992; Fawcett and Scully, 1998; Das and Teng, 2000; Holcomb and Hitt, 2007; Mahapatra, Narasimhan and Barbieri, 2010; Handley and Benton, 2012	

### ***Contract Strategy***

-Firms benefit from the use of formal contracts with fewer suppliers, particularly long-term contracts with fewer suppliers that require the supplier to provide buyers with information such as cost, quality and performance measures (e.g., Hahn, Pinto and Brag, 1983; Helper, 1991)

-In some cases, long-term outsourcing contracts may create dependence and reduce the firm's flexibility to respond to market conditions (e.g., Bryce and Useem, 1998; Handley and Benton, 2009)

-Contract employees may not have incentive to generate innovative ideas which could benefit the buyer (e.g., Momme and Hvolby, 2002)

-Accounting for contract-driven indirect costs (i.e., contract monitoring) is an important area to be considered, particularly in contracts with Chinese firms seeking more formal control in the alliance (e.g., Gillett, 1994; Li (Yaun), 2008)

### ***Cost Savings/Reduction***

-Management must be aware of competition and remain focused on controlling logistics costs in the global market (e.g., Lieb and Bentz, 2005)

-Cost savings is frequently cited as the primary reason for outsourcing (e.g., Cavinato, 1989; Maltz and Ellram, 1997; Boyson, *et al.*, 1999)

-Focus on achieving additional cost savings through outsourcing may result in firms reducing employees and physical assets (e.g., Quelin and Duhamel, 2003)

### ***Focus on Core Competence***

-Outsourcing has been identified as the primary strategy for firms desiring to focus on core competencies and benefit from the experiences of their suppliers (e.g., Rao and Young, 1994; Quinn and Hilmer, 1994)

-Outsourcing allows firms to focus on strategic planning to maximize utilization of core competencies and create more efficient organizations (e.g., Hubbard, 1993; Razzaque and Sheng, 1998)

-Identifying qualified suppliers to provide critical functions not considered core competencies of the focal firm should improve overall firm performance (e.g., Gottfredson, Puryear and Phillips, 2005)

### ***Global Supply Chain Risks***

-Outsourcing increases the probability of experiencing supply chain-related events which degrade normal business operations (e.g., Blackhurst *et al.*, 2005)

-Risk types have been classified or categorized as: delays, disruptions, systems, forecast, intellectual property, procurement, receivables, inventory, capacity (e.g., Chopra and Sodhi, 2004)

-Other types of supply chain risks might include information integration, knowledge integration, or design integration where detailed disclosure of the firm's critical information may create undesired dependence on the supplier (e.g., Christopher and Peck, 2004)

### ***Globalization of Business***

-Currency fluctuations may provide firms opportunities to expand production locations internationally (e.g., Leff, 1974)

-In order to improve overall firm performance, firms have been advised to seek out 'best-in-world' suppliers to acquire components and materials (e.g., Monczka and Trent, 1991; Monczka and Trent, 1992)

-Offshoring and outsourcing in the global business environment may produce additional challenges for the focal firm, i.e., the lack of advanced information technology linking upstream suppliers and logistics support providers in the supply chain (e.g., Byrne, 1993)

### ***Human Resources***

-A firm's clients may benefit from the outsourcing relationship in that the firm may be able to provide their clients with access to expertise or experience that the firm did not have (e.g., Dillon, 1989; Goldberg, 1990)

-Outsourcing may allow a firm to repurpose human resources to concentrate on those functions which add to the firm's competitive advantage position in the market (e.g., Weber, 1991; Helper, *et al.*, 2000; Holweg and Pil, 2008)

-Outsourcing firms may elect to transfer employees to the outsourcing provider (e.g., Barthelemy, 2001) while others may leave due to the uncertainty of the firm's new direction (e.g., Barthelemy, 2003)

-Firms must protect against the loss of personnel with detailed knowledge of the outsourced function (e.g., Lafferty and Roan, 2000)

### ***Improve Productivity***

-Strategic advantages such as faster deliveries, reduced cycle times, and expansion of services are achieved through outsourcing (e.g., Weber, Current and Benton, 1991; Lankford and Parsa, 1999; Richardson, 1993)

### ***Integration of Information Technologies***

-Information technologies expand the boundaries of the firm (e.g., Sheombar, 1992; Coronado, Sarhadi and Millar, 2002)

-Information sharing between the buyer and supplier improves the efficiency of supply chain management processes (e.g., Sahin and Robinson, 2005)

-Leveraging the supplier's information technology enables the focal firm to share supply and demand information in real time (e.g., Ferrari, 2001) and reduces uncertainty in the supply chain (e.g., Zacharia and Mentzer, 2004)

### ***Just-in-Time Complexities***

-Manufacturing and production environments benefit from 'time-based competition' (e.g., Mentzer, 1999) which leverages continuous information exchange to reduce inventory levels and improve availability (e.g., Zacharia and Mentzer, 2004)

-Supplier responsiveness is critical to successful JIT efforts (e.g., Carbone, 1999)

-Material flow could determine the success or failure in manufacturing and production environments, yet JIT programs do not traditionally have the ability to respond to demand variability (e.g., Benton and Shin, 1998)

### ***Leverage Supply Chain Management***

-Outsourcing affords firms opportunities to gain competitive advantage through the sharing of innovative approaches and technologies with a small number of diversified suppliers (e.g., Foster and Muller, 1990; Raia, 1992)

-Organizations must be committed to outsourcing relationships if they are to achieve the full value from outsourcing, including direct and open communication with suppliers (e.g., Levy, 1997; Handley and Benton, 2009)

-Outsourcing autonomy can promote supplier innovation and access to expertise in technically advanced areas, although too much autonomy can create disintegration of activities and objectives (e.g., Choi and Krause, 2006)

### ***Need for Expertise***

-Outsourcing provides firms access to unique skills and expertise of suppliers, including knowledge of customs (e.g., Bradley, 1995; Sink and Langley, 1997; Razzaque and Sheng, 1998)



-Innovativeness is increased through access to the supplier's skills and expertise which may not have been available in-house (e.g., Schniederjans *et al.*, 2005; Hoecht and Trott, 2006)

-Outsourcing may allow the focal firm to fully utilize the specialized skills and expertise of its employees which may not be available to competitors (e.g., Kroes and Ghosh, 2010)

### ***Outsourcing Risks***

-Firms may lack the ability to govern the outsourcing relationship due to cultural differences, distance, inadequate metrics, and inability to observe supplier actions (e.g., Mol, van Tulder and Beije, 2005; Aron and Singh, 2005; Alchian and Demsetz, 1972)

-Outsourcing may lead to skill erosion, loss of critical skills, declining innovation and/or inability to respond to changing customer requirements (e.g., Handley, 2012; Quinn and Hilmer, 1994; Gilley and Rasheed, 2000; Bradley, 1995)

-Negative consequences of outsourcing may include larger inventories, greater dependence, and the inability to develop new core capabilities (e.g., Levy, 1995; van Damme and van Amstel, 1996; Bettis, Bradley and Hamel, 1992)

### ***Performance Consequences***

-Processes not previously outsourced may become targets for future outsourcing, further impacting the firm's ability to distribute overhead costs or meet other intra-firm objectives (e.g., Gilley and Rasheed, 2000; Bozarth and Das, 1998; Narasimhan and Das, 1999)

-Costs savings associated with outsourcing production may be offset against increased transaction and logistics costs, or customer consequences (e.g., Mol, van Tulder and Beije, 2005; Razzaque and Sheng, 1998)

-The transition to outsourcing may lead to recognition of superior in-house skill and ability to achieve higher quality performance, thereby leading to insourcing (e.g., Kroes and Ghosh, 2010)

### ***Proprietary Systems Profitability***

-U.S. manufacturers have witnessed suppliers develop competing brands and achieve market dominance (e.g., Willard and Savara, 1988; Prahalad and Hamel, 1990; Momme and Hvolby, 2002)

-Companies limit their outsourcing to routine tasks in order to prevent inadvertent loss of core technologies to vendors who might knowingly steal intellectual property (e.g., Weidenbaum, 2005)

-Competitive edge and innovation are directly linked to the ability to prevent knowledge leak; protection of proprietary knowledge is critical if firms are to prevent an

irrecoverable shift in the balance of power in the outsourcing relationship (e.g., Narasimahan and Talluri, 2009; Chopra and Sodhi, 2004; Momme and Hovlby, 2002)

### ***Quality***

-Researchers have found that outsourcing leads to improvements in product, service and buyer-supplier relationship quality (e.g., Bozarth, Handfield and Das, 1998; Nayak, Sinha and Guin, 2007; Tate, 2009; Mol, van Tulder and Beije, 2005)

-If firms are recognized for the high quality of products or services, customers may be concerned that outsourcing will harm quality (e.g., Kakabadse and Kakabadse, 2005; Kremic, *et al.*, 2006)

-Outsourcing relationships may be improved through the use of detailed contracts that address conformance to quality standards for products, services and information (e.g., Bozarth and Das, 1998; Frohlich and Dixon, 2001; Zacharia and Mentzer, 2004)

### ***Rapid Growth***

-Outsourcing may allow the firm to meet dynamic changes to demand, productivity and changes to production volumes which impact capacity (e.g., Holcomb and Hitt, 2007; Ten Raa and Wolff, 2001; Lee, 2002; van Damme and van Amstel, 1996)

-Outsourcing can support postponement strategies or intermediate stabilization of new product lines which may have been made possible through process improvements (e.g., Van Hoek, 2001; Maltz, 1995; Nayak, Sinha and Guin, 2007)

### ***Regulatory Change***

-Regulatory environments are dynamic, each partnering country develops and applies policies which serve to increase or decrease promotion of outsourcing as an effective strategy for manufacturers (e.g., Farrell, 2004; Stack, Martin and Downing, 2005)

-International regulations may need to be developed to address global outsourcing issues such as protection of proprietary data since many policies (i.e., trade, tariffs) are national agreements which may inhibit outsourcing (e.g., Farrell, 2004; Weidenbaum, 2005; Palley, 2008; Javalgi, Dixit and Scherer, 2009)

-As policies governing global supply chain operations continue to change, there is an increased need for advanced logistics and supply chain expertise (e.g., Sink and Langley, 1997)

### ***Service Improvement***

-Outsourcing may promote supplier competition leading to service improvements for the firm and downstream customers (e.g., Kotabe and Murray, 1990; Richardson, 1993; Bradley, 1995; Gilley and Rasheed, 2000; Stanley and Wisner, 2001)

-Outsourcing may support achievement of cost savings for services. However, services are intangible and cannot be stored, therefore, any failure by the outsourcing provider to meet service levels causes the buyer to be reactive (e.g., Sink and Langley, 1997; Kremic, Tukul and Rom, 2006)

### ***Supplier Market Power***

-Firms engaging in outsourcing strategies should seek to retain bargaining power in the relationship (e.g., Holcomb and Hitt, 2007; Handley and Benton, 2012)

-Resource scarcity and small numbers trading impact the firm's ability to effect power sharing in outsourcing relationships (e.g., Fawcett and Scully, 1998; Mahapatra, Narasimhan and Barbieri, 2010)

-Firms should evaluate the potential of near-term supplier dependence and identify mechanisms for using the market to mitigate dependence over the life of the outsourcing contract (e.g., Handley, and Benton, 2012)

### ***Supply Chain Infrastructure Investment***

-Outsourcing may provide opportunities for firms to discard or transfer physical assets (e.g., Bettis, Bradley and Hamel, 1992; Handley, 2012)

-Focus on core competency may lead to development of new infrastructure or expansion of existing infrastructure to extend competitive advantage and capture additional market share (e.g., Selviaridis and Spring, 2010)

-Outsourcing may present unforeseen risks due to the extension of the global supply chain infrastructure (e.g., Speier, *et al.*, 2011) or differences in the dependability of infrastructures between countries (e.g., Metters, 2008; Kinkel and Maloca; 2009)

### ***Supply Chain Integration***

-Outsourcing affords firms the opportunity to develop inter-company relationships which integrate supply chain programs and processes, and provide avenues for risks sharing (e.g., Fawcett and Magnan, 2002; Ellram and Cooper, 1993)

-Integration with suppliers enhances new product development and access to new markets (e.g., Holcomb and Hitt, 2007; Lintukangas, Peltola and Virolainen, 2009)

-The ability to integrate supply chain functions may be limited if there are differences in firm-level cost or customer strategies (e.g., Chen, Daugherty, and Landry, 2009)

### ***Technical Advances***

-Firms holding close to internal production may remain focused on utilization of existing technologies which constrain flexibility (e.g., Harrigan, 1985)

-Dynamic environments accessed through outsourcing allow buyers to develop relationships with best-in-class suppliers and take advantage of emerging technologies without making internal capital investments (e.g., Gilley and Rasheed, 2000)

-Outsourcing may create situations where firms no longer have the ability to recognize technological breakthroughs that could lead to improvements in core competencies or competitive advantages (e.g., Kotabe, 1992; Kakabadse and Kakabadse, 2005)

### ***Upgrade Information Technologies***

-Implementation of advanced technologies allows firms to increase data/information sharing, lower costs, and better control extended supply chains (e.g., Narasimhan and Talluri, 2009)

-Information sharing between the buyer and supplier improves the efficiency of supply chain management processes (e.g., Sahin and Robinson, 2005)

## **5.4 Theoretical Grounding**

In addition to the influential factors above, we include a brief discussion of the theoretical themes of transaction cost economics (TCE) and resourced-based view (RBV) of the firm. Researchers have applied these theories in evaluation of processes, companies, industries, markets and nation-states.

As manufacturers begin to consider opportunities to reverse manufacturing, production and logistics outsourcing decisions, it is imperative to establish a theoretical basis for this decision process. In the absence of research addressing the outsourcing-to-insourcing manufacturing relocation shift, perhaps the best starting point is to refer back to the outsourcing literature. Busi *et al.*, (2008) provide the following list of theories which they found most often referenced in the outsourcing literature. Busi *et al.*, (2008) conclude that transaction cost theory and resourced-based view are the two theories most frequently applied by researchers in evaluating the outsourcing phenomenon:

1. Transaction cost theory (Coase, 1937; Williamson, 1975, 1979, 1985)
2. Resource-based view (Penrose, 1959; Richardson, 1972)

3. Principal agent theory (Ross, 1973; Jensen and Meckling, 1976)
4. Vertical integration theory (Bain, 1968; Grossman and Hart, 1986)
5. Strategic management (Quinn and Hillmer, 1994)
6. Evolutionary economics (Nelson and Winter, 1982; Mahnke, 2001)
7. Relationship market/view (Berry, 1983; Sommer, 2003)
8. Industrial economics (Porter, 1980)
9. Strategic alignment theory (Henderson and Venkatraman, 1990)
10. Core competence theory (Prahalad and Hamel, 1990)

Based on the extensive application of TCE and RBV to understand outsourcing, we elected to examine the outsourcing-to-insourcing manufacturing relocation shift through these theoretical lenses. Each theory individually adds value and context toward an understanding of the manufacturing relocation shift. However, as identified by McIvor (2009), neither TCE nor RBV alone can fully explain the complexities of outsourcing. We look to both theories to aid in providing context for evaluating and understanding the complexities of the outsourcing-to-insourcing manufacturing relocation shift.

#### **5.4.1 Transaction Cost Economics**

TCE may also be equally and broadly applied to insourcing if it is the position of firms that the expected cost savings associated with an outsourcing decision were not realized. Key theoretical elements of TCE (Williamson, 1985) are provided below. Many of these elements serve as a framework for addressing the outsourcing-to-insourcing manufacturing relocation shift. The factors below are modifications of Williamson's 1985 work where he suggests these are the key factors which lead to an increase in a firm's transaction cost:



*Human Factors:*

Bounded Rationality—the inability to consider every possible outcome associated with a transaction over time.

Opportunism—taking actions that act to preserve achievement of self-interests.

*Environmental Factors:*

Uncertainty—the effects of bounded rationality and opportunism are worsened due to the inability to identify or account for the unknown.

Small Numbers Trading—the inability to control a desired outcome due to limited availability of options within the market.

Asset Specificity—investment in an asset by the focal firm, in the absence of equal or greater investment in the asset by the supplier, decreases the focal firm's power position in the relationship and may lead to opportunistic behavior by the supplier.

The focus of the factors is to assist in identifying a continuum of when it may be best to rely on the governance mechanisms of the market to protect the firm's transaction interests and when it is best to utilize mechanisms internal to the firm's structure.

Williamson (1985) provides a brief illustration, summarizing that as asset specificity and uncertainty increase, so does the opportunism of the market. Therefore, it is suggested that in those cases which meet this criteria it is in the firm's interest to utilize governance mechanisms internal to the firm to control and mitigate transaction-specific costs. The same approach is applied to the element of transaction frequency (small numbers trading). Here Williamson (1985) calls out the loss of comparative advantage as transaction frequency significantly increases. Suggesting that as frequency increases the firm may be better suited to internalize the transaction function to minimize individual production transaction costs.

#### 5.4.2 Resource-based View

As suggested by McIvor (2009), a complimentary theoretical approach to TCE is the resource-based view (RBV) of the firm. This is consistent with Duncan (1998) who suggests there is much more to be said concerning why firms outsource than that which is captured under TCE. RBV, like TCE, recognizes the hazards of opportunism and instead of addressing opportunism through vertical integration as prescribed under TCE, RBV seeks measures to prevent uncertainty in the buyer-supplier exchange.

Applying this in the context of the outsourcing-to-insourcing manufacturing relocation shift, where TCE would suggest an absolute vertical integration approach, RBV may allow the focal firm to apply several early measures to prevent uncertainty. In other words, RBV would suggest the focal firm would undertake measures to address any escalation of uncertainty prior to making the insourcing decision. An overview of RBV (Barney, 1991) is provided below. As with the elements of Williamson's TCE, components of Barney's RBV serves as a framework for addressing the outsourcing-to-insourcing manufacturing relocation shift.

There are two key assumptions made concerning RBV. First, firms within an industry may be heterogeneous with respect to the strategic resources they control. Second, these resources may not be perfectly mobile across firms, and thus heterogeneity can be long lasting. These key assumptions are the basis of RBV—not all resources within the firm (i.e., physical capital, human capital, and organizational capital) are strategically relevant. In other words, not all resources lend themselves to creating and sustaining competitive advantage in the market place. Barney (1991) provides a

framework for evaluating whether or not particular firm resources can be sources of sustained competitive advantage using the definitions below:

--*Competitive Advantage*: when a firm is implementing a value creating strategy not simultaneously being implemented by any current or potential competitors.

--*Sustained Competitive Advantage*: when a firm is implementing a value creating strategy not simultaneously being implemented by any current or potential competitors *and* when these other firms are unable to duplicate the benefits of this strategy (note that sustained competitive advantage is not a time dependent outcome).

RBV also addresses what could be considered conditional acceptance of the so-called 'first mover advantage' normally discussed in terms of a firm's ability to be first to market. Here, Barney (1991) suggests that in industries where all firms are perceived to have equal access to and ability to obtain resources, the concept of first mover advantage is not a sustained competitive advantage. In other words, there is an ability to achieve short-term competitive advantage as a first mover but not to establish sustained competitive advantage.

Barney (1991) describes four attributes a firm's resources must have in order to hold the potential of creating sustained competitive advantage. These attributes are referred to as empirical indicators of the heterogeneity and immobility of a firm's resources necessary for generating sustained competitive advantage. These attributes state that a resource must be 1) *valuable*, in the sense that it exploits opportunities and/or neutralizes threats in a firm's environment; 2) *rare* among a firm's current and potential competition; 3) *imperfectly imitable*; and 4) there cannot be strategically equivalent

substitutes for this resource that are valuable but are neither rare nor imperfectly imitable (i.e., *no perfect substitution*)

Applying RBV, we would expect firms to reverse an outsourcing decision in response to a perceived threat to competitive advantage. More so, we would expect to see a firm's decision to insource a process, function or knowledge-based skill that is believed to meet Barney's criteria of valuable, rare, imperfectly imitable, and non-substitutable in order to protect a sustained competitive advantage. RBV would also suggest that firms will re-locate manufacturing functions in an attempt to secure or re-posture resources in order to gain (or re-gain) competitive advantage that might have been lost as a result of the outsourcing decision. As Prahalad and Hamel (1990) suggest, one critical and very relevant point made is that outsourcing may provide a shortcut to a competitive position (i.e., short-term cost reduction) but it contributes little to building the people-embodied skills needed to sustain product leadership. Looking at this perspective through the lens of RBV, we should expect that the erosion of core competence supports an outsourcing-to-insourcing relocation decision. This decision should enable the firm to begin re-securing its core competence base and, in-turn, its purposeful and competitive use of resources.

#### **5.4.3 Theoretical Overlap, Divergence and Value Conflict**

McIvor (2013) calls for research to examine the supporting applicability and potential contradictions of both TCE and RBV in understanding the manufacturing location decision. As an answer to this call, we provide case-specific outsourcing-to-

insourcing context for TCE and RBV overlap (i.e., similar prescription), divergence (i.e., dissimilar prescription) and/or conflict (i.e., opposing prescription).

#### **5.4.4 Overarching Research Questions**

1. What are the primary influential factors associated with a firm's outsourcing-to-insourcing manufacturing relocation decision?
2. Why and how are these primary insourcing influences different from (the same as) the primary influences associated with outsourcing?
3. How do the themes of transaction cost economics (TCE) and the resource-based view (RBV) of the firm align with the primary insourcing influences?

### **5.5 Research Method**

This research fills an apparent void in the academic literature addressing the influential factors (why?) which facilitated a manufacturer's decision to make an insourcing decision. Qualitative research methods were selected to support this research since the primary focus was to address 'why' questions concerning the outsourcing-to-insourcing manufacturing relocation shift.

Hayes (2000) identified the need for "less hypothesis testing and more systematic observation to help managers deal with their actual problems." As the research centers on 'why' questions concerning the outsourcing-to-insourcing manufacturing relocation shift, Yin (2009) and Ellram (1996) suggests that qualitative, exploratory case study research is appropriate. This is in part due to the uniqueness of the contemporary event where there is little prior understanding of the phenomenon. Coughlin and Coghlan

(2002) recommend use of qualitative research methods to develop models and theories to explain current phenomena (i.e., the outsourcing-to-insourcing relocation shift).

#### **5.5.1 Sample Size**

Pratt (2009) states, “unlike quantitative research ... there is no magic number of interviews or observations that should be conducted in a qualitative research project. What is ‘enough’ depends on the question a researcher seeks to answer.” Witt and Redding (2009) suggests qualitative research methods usually make a trade-off between sample size and depth of research detail. Eisenhardt (1989) suggests there is no ideal number of cases but 4-10 cases have worked well for most qualitative studies. Her rationale is that researchers using less than 4 cases will find it difficult to convince readers of sufficient empirical grounding while those dealing with more than 10 cases may find it difficult to “cope with the complexity and volume of data,” gathered. Ellram (1996) identifies the use of 6-10 cases for qualitative research as a sample size sufficiently large enough to properly evaluate a set of research propositions. This body of research was developed using 30 interviews completed with 12 different companies, and incorporates findings from 14 specific case studies. Information from the interviews and cased studies was used to examine elements of the outsourcing-to-insourcing relocation shift and evaluate the themes of TCE and RBV in the context of insourcing.

#### **5.5.2 Sampling Strategy**

Eisenhardt (1989) states, “selection of cases is an important aspect of building theory from case studies...the concept of population is crucial, because the population

defines the set of entities from which the research sample is to be drawn. Also, selection of an appropriate population controls extraneous variation and helps to define the limits for generalizing the findings.” She further adds, “while cases may be chosen randomly, random selection is neither necessary, nor preferable.” Research participants and insourcing cases were selected within the manufacturing and manufacturing material support industries for analysis as a means of controlling for variation across industries. Two units of analysis were examined, 1) the individual firm and 2) the specific insourcing case.

### **5.5.3 Data Collection**

Our approach was to gain insight into the experiences of senior executives and managers familiar with the rationale and objectives which lead to the outsourcing-to-insourcing decision. First, during the data design phase, we applied insights gained from the extant literature to develop an interview questionnaire. The primary and secondary questions were developed in such a manner as to allow the participants to share their unique perspectives. The interview questions were validated by colleagues who were experienced researchers with extensive knowledge of the outsourcing literature. Secondly, we selected participants based on their positional responsibilities and understanding of the firm’s insourcing strategies. A total of 30 interviews were conducted with “persons who are best informed” (Voss, *et al.*, 2002, pg. 206) of the firm’s views on the outsourcing-to-insourcing shift and specific insourcing cases.

Each interview participant agreed to provide access to company information, historical records and additional supporting personnel which would round-out the

collection of relevant information. Twenty-nine interviews took place in-person, one was completed via telephone. All 30 interviews were digitally recorded and professionally transcribed in order to support thorough coding and analysis. We have identified the positional titles, number of formal interviews conducted and average duration of each interview in Table 10 below. The names of each participating firm have been omitted at their request as a means of protecting proprietary and / or confidential information.

**Table 10 – Research Participants**

Firm	Position of Participants	# Interviews	Interview Duration (Ave.)	Firm	Position of Participants	# Interviews	Interview Duration (Ave.)
A	Vice President, Equipment Operations	4	1hr 16mins	E	National Senior Fleet Manager	2	1hr 50mins
	Manufacturing Engineering Manager				State-wide Fleet Manager		
	Manager of Sourcing & Process Engineering			F	Vice President, Sustainable Operations	3	1hr
	Senior Quality Manager				Vice President, Engineering		
B	Director, Overseas Operations	3	1hr 14mins	G	Executive Director, Operations	2	1hr 10mins
	Manager, Supply Management				Manager, New Plants Instrumentation & Control Systems		
	Supply Council Manager				Program Manager, Legacy Systems & Upgrades		
C	Director, System Program Management & Customer Support	4	1hr 32mins	H	President / CEO	1	48mins
	Manager, Aftermarket Business Development			I	President / CEO	1	1hr 44mins
	Purchasing Manager			J	Associate Director of Engineering	2	1hr
	Procurement Analyst				Director, Global Procurement		
D	Vice President, Supply Chains	4	2hrs 12mins	K	Executive Director, Quality Assurance	1	1hr 30mins
	Director, Supply Chain Management			L	Vice President, Outside Sales	3	1hr 14mins
	Manager, Supply Chain				Operations Manager		
	Commodity Manager				Customer Engagement Lead		

Ten primary research questions were addressed during the course of the interviews (see Appendix A). Although each of the 10 questions adds value to the body of knowledge, the focus of this current research stream is to present a foundational understanding of the factors that are influential in the manufacturing outsourcing-to-insourcing shift. During the interviews, senior executives and managers were presented with the research question, “*How do the following factors influence an insourcing decision?*” Discussion of each of the 23 factors was informed by the literature as presented in Sections 5.3 above. Secondly, each firm identified a specific insourcing case and key personnel familiar with the outsourcing-to-insourcing decision were interviewed.



A formal case study worksheet (See Appendix B) was used and each interview was recorded, transcribed and coded for evaluation.

An iterative, multi-phase collect-analyze-compare process was applied for the firm-level interviews and for each specific insourcing case. Binder and Edwards (2010) state that in using this approach, “the researcher moves back and forth between data collection, coding and interpretation in an iterative manner (analytic induction) until theoretical saturation is achieved (newly analyzed data do not prompt further changes to the concepts) which leads to a tightly woven theory that emerges from and is ‘grounded’ in the data.” This approach, coupled with the use of “why” and “how” questions “...provide(d) depth and richness for constructing knowledge and building theories of contemporary and little known phenomena” (Binder and Edwards, 2010).

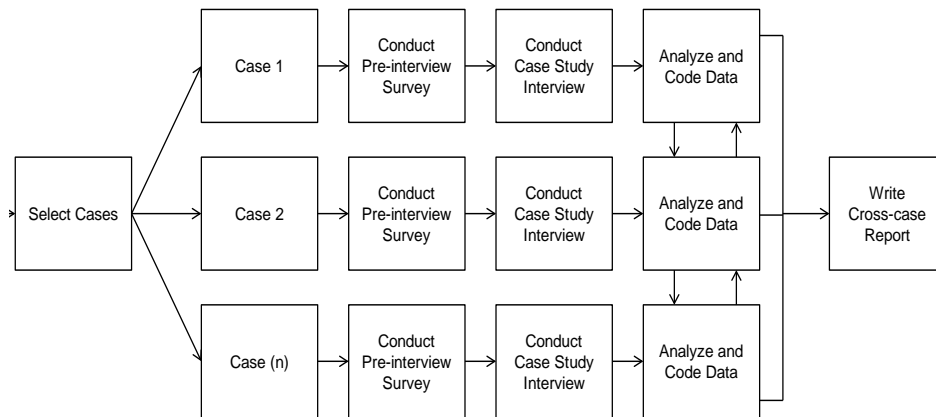
Strauss and Corbin (1998) provide a data and information coding methodology which allowed the researcher to systematically evaluate the information gathered through the interview process. The coding methodology applied to this research was:

- Stage 1: Development of key template categories based on research objectives.
- Stage 2: Codification and analysis of interviews.
- Stage 3: Clustering of codes into coherent categories.
- Stage 4. Development of coding master table (axial and selective coding).
- Stage 5. Formation of propositions. (See Section 5.9)

Binder and Edwards (2010) suggest that this is not to be a linear approach from Stage 1 to 5, therefore the research approach involved iterations within and between stages as the researchers became more familiar with the data. Figure 13 below illustrates the high-level approach applied during the data collection and analysis process. It

highlights the major steps of the approach which were required in order to achieve a high degree of research reliability (i.e., repeatability) (Yin, 1989).

Information and data gathered through the interview and case study approach was synthesized into case reports which were made available to the research participants for content validation. The case reports were then used as substantive and supporting content, along with other literature and information collected, to formally structure the results in tables which supported further analysis through pattern matching. This approach ensured reliability of the research approach and enables future expansion of the number of cases (and inclusion of other industries).



**Figure 13 – Research Data Collection and Analysis Approach**

## 5.6 Analysis and Results: Firm-level Interviews

Participants were asked to select a value, 1-5 [1 = lowest, 5 = highest] which best reflects the level of influence the specific factor has on firm-level outsourcing-to-insourcing decisions. We present the results of the firm-level question, “*How do the following factors influence an insourcing decision?*” in summary format in Table 11

below. For purposes of meaningful examination, we have sorted the ordinal data for each factor by total score value, highest to lowest. There is no implied or inferred quantitative analysis being conducted here. In other words, there is no quantifiable difference between a selection of ‘5’ or ‘4’ other than the justification provided by the research participants, just as there is no quantifiable difference between ‘41’ and ‘42’. As this is not a quantitative analysis of the factor scores, our primary objective is to use ‘power quotes’ (Pratt, 2009) identified in the coded transcripts to describe the rationale behind the participant’s response selection. Factor scores, response rationale and additional information provided by the firms were triangulated then examined for each firm (i.e., within case analysis) and across firms and against other cases (i.e., cross case analysis).

**Table 11 – Interview Question #4, Firm-level Summary Results**

Influential Factor	Organization - Senior Leader Perspective												Total
	A	B	C	D	E	F	G	H	I	J	K	L	
Cost Reduction	5	5	4	5	5	4	5	4	5	5	4	4	55
Performance Consequences	5	4	4	4	3	5	3	4	5	5	5	4	51
Improve Productivity	4	5	2	4	4	3	4	5	5	5	2	4	47
Need for Expertise	5	3	3	4	3	5	4	4	4	3	4	5	47
Quality	4	3	4	4	4	5	1	3	5	4	5	5	47
Focus on Core Competencies	4	3	5	4	4	5	3	4	3	2	2	3	42
Service Improvement	3	1	4	3	4	5	2	3	5	3	4	5	42
Supplier Market Power	5	1	2	4	3	4	2	4	5	4	5	3	42
Technical Advances	5	1	4	3	4	5	3	4	4	1	3	5	42
Global Supply Chain Risks	4	3	4	3	3	4	4	1	3	3	5	4	41
Outsourcing Risks	5	3	4	1	4	5	3	2	3	1	4	4	39
Just-in-Time Complexities	3	2	3	1	3	5	3	1	5	2	4	5	37
Supply Chain Infrastructure Investment	2	3	3	2	4	4	1	3	4	4	3	4	37
Regulatory Change	5	5	2	1	4	4	4	1	4	1	4	1	36
Rapid Growth	4	4	2	1	3	4	1	4	5	1	4	2	35
Leverage Supply Chain Management	3	3	2	5	3	2	2	2	4	2	3	1	32
Supply Chain Integration	3	1	3	4	3	3	1	1	4	4	3	2	32
Contract Strategy	4	5	1	3	2	3	1	1	5	2	2	1	30
Human Resources	3	2	2	4	5	1	2	4	4	1	1	1	30
Proprietary Systems Profitability	5	2	3	1	2	1	5	1	4	1	3	1	29
Globalization of Business	2	4	3	5	2	1	1	1	1	2	3	1	26
Integration of Information Technologies	3	1	1	1	4	1	3	1	5	1	1	3	25
Upgrade Information Technology	4	2	1	1	3	1	1	1	4	1	1	2	22

### 5.6.1 Discussion of Firm-level Interview Results

In this section we discuss Table 11 from an overarching firm-level perspective.

That is, we examine the information in Table 11 from the viewpoint of the firm’s senior

executives and managers, with the intent of recognizing patterns of similarity as well as identification of dissimilar responses across firms. It is through this pattern recognition (Eisenhardt and Graebner, 2007) that we are able to begin developing a deeper understanding of the importance firms may place on any single influential factor. Again, the value selected to represent the influential importance of a factor to the firm is just the beginning. We are ultimately interested in developing an understanding of the ‘why’ behind the selection. This requires developing a linkage between the values in Table 11 and the coded transcripts. The coded transcripts allow us to reference specific discussion points or comments made by senior executives and managers that provide substantiation of the value selection. Together, the value selected and supporting comments provide an invaluable basis for proposition development, theory evaluation and future research concerning firm-level outsourcing-to-insourcing manufacturing relocation decisions.

### ***First Pass Pattern Recognition***

In looking at the patterns represented in Table 11 above, our first pass examination identifies a high degree of importance placed on the following factors by the firms as indicated by the consistency of the dark box pattern for the influential factors:

- Cost Reduction
- Performance Consequences
- Improve Productivity
- Need for Expertise
- Quality

For example, senior executives and managers have identified *cost reduction* has having the highest degree of influence on the outsourcing-to-insourcing manufacturing

relocation decision. Seven of twelve firms selected the value ‘5’ and the remaining five firms selected the value of ‘4’ to represent the level of influence cost reduction has on any decision to insource manufacturing workload. We also recognize a strong degree of similarity for the *upgrade information technology* factor at the bottom of the table. For this factor, nine of twelve firms selected the values ‘1’ or ‘2’ to represent a very low degree of influential significance related to the outsourcing-to-insourcing decision.

As important as it is to identify and understand similarities, the results associated with those factors with high degrees of dissimilarity also provide insight into the complex outsourcing-to-insourcing manufacturing relocation issues. For example, the *outsourcing risks* factor is representative of those factors where there appears to be a high degree of dissimilarity across firms. Here we see two firms selected the value ‘5’ to identify a very high degree of influence while on the other end of the value scale two firms selected the value ‘1’. Coded transcripts allow us to gain a deeper understanding of the true meaning of the responses in examining similarities and dissimilarities of selected values.

Our initial review of the factor-specific values and coded transcripts revealed there may be a logical grouping of the influential factors into tactical, strategic and enabling influences. The following descriptions are provided for each grouping:

**Tactical Influences:** factors closely linked to firm-level achievement of near-term customer service, financial management, production, and resource utilization goals.

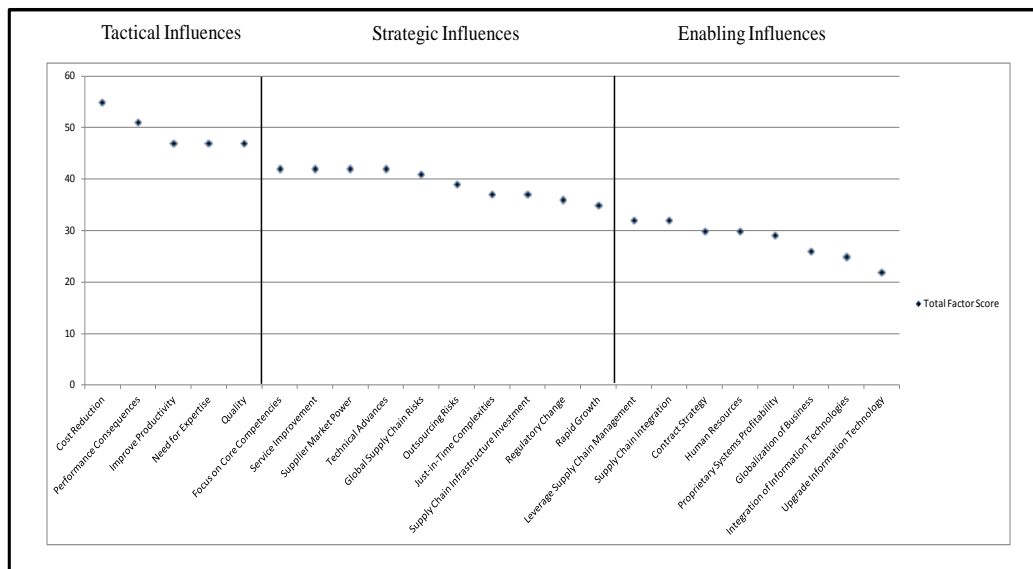
**Strategic Influences:** factors for which the firm’s managers develop and position resources in response to anticipated mid-term changes in internal or external conditions.

**Enabling Influences:** factors which support achievement of the firm’s long-term intra- or inter-firm objectives.

We have structured Figure 14 below to reflect this organization and provide support for this arrangement based on respondent's selection of influential value and statements made by interview participants. It appears the tactical influences to be the most influential in the outsourcing-to-insourcing manufacturing relocation decision. We provide detailed analysis of the firm-level values and supporting comments for each of the five factors aligned to this group. This approach allowed us to begin developing and rationalizing a response to our first research question:

*What are the primary influential factors associated with a firm's outsourcing-to-insourcing manufacturing relocation decision?*

Summary analysis is provided for the 10 strategic influences and 8 enabling influences at the group level. This approach allowed us to examine example factor-specific value inconsistencies and provide examples from the coded transcripts which support the grouping assignment and stated results.



**Figure 14 – Tactical, Strategic and Enabling Influences**

### ***Tactical Influences***

As defined above, tactical influences are those factors closely linked to firm-level achievement of near-term customer service, financial management, production, and resource utilization goals. Examination of the firm-level values in Table 11 and the coded transcripts allowed us to identify five factors firm selected as having the most influence on the outsourcing-to-insourcing manufacturing relocation decision. Those five factors are Cost Reduction, Performance Consequences, Improve Productivity, Need for Expertise, and Quality. Results for each of these factors, including supporting evidence from the coded transcripts is provide below.

Cost Reduction-100% of the firms (12/12 firms; 30 interviewees) identified this factor as having the highest influence on the outsourcing-to-insourcing manufacturing relocation decision. As with outsourcing, it appears *cost reduction* is the most significant reason why firms elect to insource manufacturing or manufacturing support services. While there is no apparent value or pattern dissimilarity across firms (i.e., all firms selected a value '4' or '5'), the basis of value selection does vary. Firms identified cost reductions related to labor, transportation, distribution, pipeline inventory and broader allocation of overhead costs as examples. One senior manager participant provided the following statement which is indicative of many firms insourcing manufacturing workload from offshore outsource suppliers:

...looking at how much it's costing us. It used to cost us \$1,400 for a container to ship it over here and that was when we were outsourcing this product to China. Today it's \$4,500 a container and we've eroded our margin based on the transportation cost. It's a fourfold increase in the cost of our product moving across the ocean.

Others identified costs reduction opportunities through development of non-core competency areas to extend machine and capacity utilization as a mechanism to reduce direct and indirect costs. The statements below are examples representative of statements made by several large, medium and small manufacturers:

...there will be times that we decide we're going to load up something in order to get the overhead—we've done this in our career, brought parts back in to get our overhead rate down.

...we were sending spindles out, most of the C&C machines have a spindle that needs to be rebuilt once a year, once every two years, and to get those rebuilt people were charging \$10-, \$15-, \$20,000 dollars. We put a couple of guys on it and they figured out how to do it for about half the costs. So we end up getting into that business just to keep the price reasonable.

For all firms, insourcing is seen as a primary mechanism for reducing, containing and controlling manufacturing related direct and indirect costs. Senior executives and managers consistently selected *cost reduction* as the most influential factor in the outsourcing-to-insourcing manufacturing relocation decision.

Performance Consequences-83% of firms (10/12 firms; 26 interviewees) selected a value of '4' or '5' to describe the influence *performance consequences* has on the outsourcing-to-insourcing manufacturing relocation decision. Two firms (4 interviewees) selected a value of '3'. To many firms selecting a value of '4' or '5', performance consequences range from "...we began to develop a lack of confidence that the supplier would be able to meet our production schedule which could produce delays or stoppages of our lines" to "...the supplier no longer added value to the component".



There were examples where firms outsourced initial manufacturing of components in order to stabilize the production process. Once the supplier had stabilized the process and the component's reliability and quality were consistently meeting the firm's objectives, the component was insourced and integrated into the firm's manufacturing environment. This indicates that outsourcing served to improve manufacturing, production and component performance. However, once the desired performance characteristics were achieved, the manufacturing relocation decision was made to insource the component—"...but once we understood the final product and the qualification of it, we [determined] we can do this process as well inside."

Two examples were given where firms had worked to develop specific manufacturing processes with suppliers to produce components that were to be integrated into final assemblies. Both firms had very similar experiences following initial testing and acceptance of the supplier's component. In both cases, the supplier changed processes without the firm's knowledge and the firm was no longer able to fully integrate the component into the end item. The production was insourced after the firms faced increasing costs, significant delays, inability to meet customer delivery schedules. These examples are best summarized by a statement from an account executive, "...why should we continue to pay them to make the same mistakes we could have made. We got our engineers involved to get it [production] stable. Don't redesign so you can send it out again." In recognizing the performance consequences and responding, the firms were able to regain control of the production process and, in-turn, meet their production schedules.

As a final example associated with the *performance consequences* factor, a firm described a scenario where the firm's level of business with the supplier over time represented a smaller portion of the supplier's overall revenue. As a result, the supplier's delivery performance became unacceptable. The supplier's delays began to impact the firm's relationship with downstream customers and the firm made the decision to develop in-house capabilities in parallel with the supplier's as a near-term solution. Supporting this, the senior manager stated, "...the size of the change, [determines] whether we'll do it all at once and/or go in phases." Eventually, the firm fully established the internal capability and completely insourced their workload from the supplier.

For the two firms identifying this factor with a value of '3', neither had experienced performance consequences associated with their outsourced workload. Each firm agreed that it is a factor that should be considered during any evaluation of outsourcing-to-insourcing opportunities in the event that any performance consequences could not be managed through market-driven competition where switching costs are low.

Improve Productivity-75% of firms (9/12 firms; 20 interviewees) identified *improve productivity* as having significant influence on their outsourcing-to-insourcing manufacturing relocation decisions as represented by their selection of value '4' or '5'. Of the remaining three firms, one firm selected the influential value '3' and two selected the value '2' to describe the level of influence improve productivity has on the manufacturing relocation decision.

Characteristics of this factor from the outsourcing literature include, but are not limited to, faster deliveries, reduced cycle times or expansion of services. For several of

the firms who identified *improve productivity* as a highly influential factor concerning insourcing, their rationale is best exemplified by a senior executive's position that, "...there is value in [having it] in-house because your responsiveness of resources that you can control is for your own production. There's inherent value to wrap your hands around that and be able to control destiny whereas if you're ordering something from an outside supplier and you're [only] 1/100<sup>th</sup> of their business it is hard to get their attention." The executive was referring to the ability of the supplier to prioritize and respond to changes in demand associated with the firm's production schedule. The inability (or lack of willingness) of the supplier to respond can significantly increase cycle times. In this example, insourcing the production of the sub-component was seen as a mechanism to mitigate changes in demand-driven production.

For smaller firms, there is a constant awareness of productivity measures as evidenced by one executives comment, "...we walk and talk and breathe that [improved productivity] every day." The executive was conveying that any supplier-driven delays (i.e., product quality or delivery) can have a significant impact on smaller firms who may not have the ability to mitigate productivity impacts. Larger firms, on the other hand, may have the in-house resources to absorb delays created by the outsourced provider, particularly when the outsourced supplier is producing components using the firm's engineering and design package.

As one executive identified, if there are continued problems with the supplier "...we can readily go into our machine shop, take our existing design and make [machine set up] modifications within a day or so. Our time to market and to research is a lot faster

than what we have outsourced.” Although this type of insourcing may not be economically feasible, even for large firms, it is apparent through the interviews that productivity and customer responsiveness are very important in highly competitive markets. In order for firms to insource workload in an attempt to improve productivity, it is most likely that they would seek “...to prove it out on the cost side and [determine if] it made the business case.”

Ten interviewees representing three firms identified values of ‘3’ and ‘2’ to describe the influence of *improve productivity* on outsourcing-to-insourcing decisions. These values may be best described by a senior manager who suggested that there are advantages to outsourcing but those advantages can be quickly eroded “when we’re somewhat limited in how we control that supplier. If he runs in to problems, if he doesn’t tell us right away and tries to work it, we may be hit with a surprise in a few weeks...we’re going to be out of parts.” We determined from these types of comments that the firms were satisfied as long as they had visibility into the supplier’s processes.

Need for Expertise-66% of firms (8/12 firms; 19 interviewees) either assigned a value of ‘4’ or ‘5’ to this factor’s influence while the remaining three firms (11 interviewees) identified the value of ‘3’. The outsourcing literature suggests that firms may derive value through the use of the supplier’s skills and expertise. However, we identified specific examples where firms elected to insource manufacturing and manufacturing support services in order to better utilize the expertise of their employees. This included, in some cases, addition of new personnel with specialized skills. These

personnel were either very experienced technicians or were highly qualified professional employees with advanced certifications in areas such as engineering or quality.

One senior manager commented “...a lot of companies are looking at Detroit because there’s an abundance of engineers that have lost jobs because of outsourcing.” His firm was in the process of re-evaluating their portfolio of outsourced manufacturing and manufacturing support services to determine, based on the availability of qualified engineers, what workload could be brought in-house.

In another example, one executive commented that the technical complexities of manufacturing equipment now requires firms to examine the qualifications of their existing workforce to ensure the firm has the right skills and expertise needed for growth. This firm acquired a very dynamic, state-of-the-art multi-axis milling machine after conducting exhaustive lean and six sigma process improvement events. As a result of acquiring the new machine, the firm found that the current employees lacked the expertise to use the full capability of the machine. After hiring several new production engineers who had the necessary knowledge, skills and abilities, the firm insourced all multi-axis milling work it had outsourced over the last several years. They were able to develop multi-axis milling as a core competency which significantly added to their internal production capabilities and improved the firm’s value to its customer base.

One interesting comment was provided by a firm who has developed extensive outsourcing relationships with manufacturers in China. The manager suggested that manufacturing technologies are advancing at such a rate that their firm recently began searching for new hires with specialized software experience. The firm was acquiring

new manufacturing equipment that requires software coding skills and these new employees were going to be the “...manufacturing workforce of the future”. The firm’s new manufacturing strategy will have significantly fewer employees yet will enable the firm to insource workload from China that will improve its overhead cost position.

The firms identifying this factor with a value of ‘3’ were primarily focused on better using the skills and expertise of their existing workforce. Some did comment that as the global economic environment changes (i.e., access to cheap labor) their firms may begin to look at opportunities to invest in new manufacturing processes and equipment. However, their current outsourcing relationships allowed them to access the skills and expertise needed to meet production and customer demands.

Quality-75% of firms (9/12 firms; 24 interviewees) considered the influential value of *quality* as significantly important in their evaluation of outsourced manufacturing as evidenced by their selection of the value ‘4’ or ‘5’. Two firms selected the value ‘3’ and one firm selected the value ‘1’. Expected quality improvements, especially associated with non-core competency areas, are often associated with outsourcing. Many of the research participants identified erosion of product or process quality as one of their top reasons or drivers for electing to insource workload.

One senior manager summarized the importance of quality this way, “quality is very critical and important. If you don’t have the right quality coming from your supplier, I don’t think it’s a knee-jerk reaction to say, ‘well, we’ve got to bring it in because they can’t do it’.” Other managers suggest that “you get what you pay for” and although labor-related costs have allowed firms to outsource to overseas manufacturers,

customers are looking for reliability and quality in the products they purchase. This point is made by one executive who stated, “what good does it do for us to save a dollar when you don’t sell something” because the level of quality just isn’t there.

Other firms identified design and conformance quality issues as being significant drivers for insourcing workload from their suppliers. Examples provided included discussion of suppliers who were facing financial difficulties which lead to an erosion of product quality most likely attributed to relaxed process standards. One firm went to great lengths to work with their supplier to improve the quality of a subassembly which was to be integrated into a final assembly. After months of repeated issues, the firm re-aligned internal capabilities to bring the work in-house, stating, “...I won’t put anything in my product that’s not the best to me, we pride ourselves on the level of quality that we have.”

There are also firms who have product liability issues where quality standards must be achieved. For example, a large manufacture who had outsourced a significant amount of work to an overseas manufacturer found repeated quality issues to be huge cost issues. Although the outsource manufacturer was responsible for quality, the firm was responsible for cost associated with customer returns and, in-turn, potential loss of market share attributable to quality related product re-calls. This point is summarized by the following comment made by the senior quality engineer:

...if there was an issue with the design or quality of their manufacturing we would be able to go back to them at some level to recoup costs that we incur for that if we were to have a recall or something like that. The problem is that the face of it, when the customer, the retailer has that on their shelf, they aren't sending it back to the contract manufacturer, it comes back through us.

The firm identifying quality with a value of ‘1’ commented that their approach to addressing quality issues is to work with the supplier. If the supplier’s quality does not improve to acceptable standards, the firm first looks for other suppliers who have the required design or manufacturing capability. For this firm, quality issues alone would not be a primary driver for insourcing. Other factors such as *cost reduction* or opportunities to *improve productivity* would also need to be evaluated.

### ***Strategic Influences***

As defined above, we identified factors for which the firm’s managers develop and position resources in response to anticipated mid-term changes in internal or external conditions as strategic influences. There may be some degree of overlap between factors identified as tactical and those identified as strategic. However, the value selection and views expressed by interview participants support the organization of the 10 influential factors called out below into the category of strategic influences:

1) Focus on Core Competencies; 2) Service Improvement; 3) Supplier Market Power; 4) Technical Advances; 5) Global Supply Chain Risks; 6) Outsourcing Risks; 7) Just-in-Time Complexities; 8) Supply Chain Infrastructure Investment; 9) Regulatory Change; and 10) Rapid Growth

This alignment is supported by the views expressed by senior executives, managers and personnel within the firm familiar with the firm’s strategic views concerning the outsourcing-to-insourcing manufacturing relocation shift. For example, in discussing the *focus on core competencies* factor, participants commented that the reason for outsourcing manufacturing functions to begin with was that the function was not a core competency. Most firms agreed that their need to adapt to changes in the global market may force them to re-evaluate existing core competencies against internal firm



changes. Examples provided of these changes include leadership turnover, new visions for expanding current market sales, and creation of new product lines.

This same type of rationalization appears in the interview transcripts for the other influential factors. For example, responding to increases in *supplier market power*, firms suggested they would first evaluate efforts to work with other suppliers before making an insourcing decision. However, this approach was not successful for one firm. The firm ultimately identified an internal ability to manufacture subcomponents in-house thereby reducing the supplier's power position. One executive with a very large manufacturing firm summarized this point,

...once it gets around the market place that I'm going to pull work out of a supplier and we have the capability to do it in-house we're able to use that as leverage. We tell other suppliers that 'hey, you need to help us improve on costs, otherwise we're going to pull this thing in'.

This type of approach may not support achievement of near-term objectives (i.e., tactical influences), but is more representative of a firm's ability to evaluate influential factors and make decisions that may take time to implement. Insourcing decisions associated with *outsourcing risks* may be best summarized by the following senior executive's statement, "...people don't understand that moving stuff [away from the supplier], especially complex business, is hard and risky." In other words, if it is not a core competency, firms may be reluctant to insource functions unless the outsourcing risk has the potential to negatively impact the firm's business objectives. This may be why 6/12 firms selected a value of '4' or '5' to represent the influence of *outsourcing risks* on the outsourcing-to-insourcing manufacturing relocation decision.

### ***Enabling Influences***

Based on the firm-level interviews, we defined this category of factors as those factors which support achievement of the firm's long-term intra- or inter-firm objectives. While the outsourcing literature suggests these factors have some degree of influence on outsourcing decisions our results suggests firms view these factors as having very little, if any, influence on the insourcing decision. This is most likely due to the position expressed by several firms that insourcing decisions are normally executed in response to an externally-driven issue which triggers the insourcing event. The influential factors considered to be enablers of the insourcing decision are better aligned with achievement or recognition of long-term objectives. We provide supporting examples below, taken from the coded transcripts, which support this position.

Human Resources—for many firms, the ability to hire, train and fully utilize their internal resources does appear to moderately influence firm-level manufacturing relocation decisions; however, it has little influence on the near-term decision process. For example, one executive stated that the question asked during the evaluation of relocation opportunities is, “how long will it take for me to train that workforce in order to bring that workload in?” This question suggests that if the workload cannot be accomplished with the existing workforce, the long-term training required in order to develop the requisite expertise may offset any other near-term insourcing advantages.

A senior manager recalled discussions where insourcing workload from the outsourcing supplier would have made economic sense in terms of improving fixed costs allocation. However, this near-term economic advantage was overshadowed by

requirements to cross-train employees (develop additional niche skills) to support the insourced workload. Without any long-term guarantee the re-trained employee(s) would remain with the firm, any decision to insource the workload presented unnecessary risks. An executive faced with a similar scenario commented, “there’s nothing to retain employees. We realized that we were training people to go to work for someone else.” We concluded that most firms would not make an insourcing decision if the decision required the firm make investments in specialized training for employees, particularly if there were no guarantees of retaining the re-trained employee(s).

Firm-level perspectives and comments concerning the remaining influential factors aligned with the Enabling Influences category clearly suggested that these factors would not significantly influence a near-term or mid-term manufacturing relocation decision. For example, senior executives and managers revealed that the factors *leverage supply chain management, supply chain integration, and integration of information technologies* would have more influence on an insourcing decision if the firm was focused on increasing intra-firm performance between disparate organizations.

Many firms expressed concern with *proprietary systems profitability* and commented that there are increasing pressures to protect intellectual property, e.g., engineering designs. Firms were aware that outsourcing, particularly overseas outsourcing, presents firms with unique challenges in this area. However, most firms suggested that prior to considering insourcing the function they would first look to re-source the function (i.e., nearshore or reshore) from an overseas location.

## **5.7 Analysis and Results: Specific Insourcing Cases**

Firms provided specific insourcing case examples which were discussed during the interviews with the firm's senior executives, managers and other personnel familiar with the specific insourcing case. A formal case study worksheet and interview guide were provided to the participants in advance of the interview then discussed in detail during the interview. Each interview was digitally recorded and professionally transcribed. The transcripts were then coded to support further analysis of the individual cases. Table 12 below captures the content of the case study worksheet. The table includes descriptive details of each specific insourcing case. Our focus was to identify the top three factors having the most influence on the specific insourcing decision and attempt to identify patterns of influence across and between the cases (Eisenhardt and Graebner, 2007).

**Table 12 – Specific Case Summaries**

Firm	Case Description				Outsourced Duration					Outsourced Provider's Location								Insourcing Decision Justification
	Final Product	Sub-assembly	Component	Service	< 1 yr	1-2 yrs	3-5 yrs	5-10 yrs	> 10 yrs	Locally (<90 mi.)	Regionally	Outside Region (within U.S.)	Outside U.S.					
													Canada	Mexico	Europe	Asia		
A			X					X							X		1. loss of profit in value chain 2. improve quality 3. leverage in-house capability	
B		X						X		X							1. reduce cost 2. focus on core competency 3. improve quality	
C				X				X		X							1. reduce cost 2. improve quality 3. improve delivery performance	
D		X						X								X	1. production performance consequences 2. outsourcing risks 3. improve delivery performance	
E(1)				X					X	X							1. improve productivity 2. improve reliability 3. production performance consequences	
E(2)				X				X		X							1. improve delivery performance 2. reduce cost 3. leverage in-house capability	
F(1)		X							X			X					1. supplier market power 2. production performance consequences 3. reduce cost	
F(2)		X					X			X							1. technical advances (product maturity) 2. improve productivity 3. leverage in-house capability	
G		X							X			X					1. reduce cost 2. supplier market power 3. improve delivery performance	
H	X								X			X					1. focus on core competency 2. need for expertise 3. technical advances (capital equipment)	
I(1)		X						X			X						1. improve delivery performance 2. just-in-time complexities 3. improve quality	
I(2)			X						X	X							1. reduce cost 2. technical advances (capital equipment) 3. improve quality	
J	X							X								X	1. reduce cost 2. production performance consequences 3. improve productivity	
K	X							X						X			1. reduce cost 2. improve quality 3. production performance consequences	

### 5.7.1 Discussion of Case Study Results

As indicated by the cases identified in Table 12 above, nine out of fourteen cases identified cost reduction or other financial improvements as having the most influence on the insourcing decision. Seven out of fourteen cases included quality or reliability measures as having the most influence. As seen in Table 13 below, factors categorized as Tactical Influences appeared 33 times in the listing of the top three justifications for the insourcing decision, Strategic Influences appeared 9 times. None of the cases identified

any of the Enabling Influences as being significant in the specific outsourcing-to-insourcing manufacturing relocation decision.

**Table 13 – Examination of Influences**

Insourcing Justification	Influential Grouping		
	<i>Tactical</i>	<i>Strategic</i>	<i>Enabling</i>
<i>#1 Influence</i>	<b>11</b>	<b>3</b>	<b>0</b>
<i>#2 Influence</i>	<b>9</b>	<b>5</b>	<b>0</b>
<i>#3 Influence</i>	<b>13</b>	<b>1</b>	<b>0</b>

The results from the specific cases align with the firm-level perspectives gathered through the interviews. This further supports our categorization of the 23 influential factors into Tactical, Strategic and Enabling influences. The interviews with senior executives and managers, and the cases examined suggest that insourcing decisions are predominantly made in order to achieve a firm’s near-term objectives. These near-term objectives have been identified as 1) decrease costs, 2) mitigate performance consequences, 3) improve productivity, 4) address intra-firm needs for expertise, and 5) improve quality.

## 5.8 Conclusions

Our research results fill a known gap in the operations and supply chain management literature concerning the primary factors influencing the outsourcing-to-insourcing manufacturing relocation shift. Our contributions to the literature include a survey of the outsourcing literature which identified 23 factors considered to influence outsourcing decisions. We examined each of these 23 factors and identified the 5 most significant influences on the outsourcing-to-insourcing relocation decision.

The results from the interviews were then evaluated against 14 manufacturing insourcing cases to determine if firm-level perspectives of factor influence were the same as those identified for the specific insourcing cases. Our results indicate that firm-level perspectives of factor influence aligned with case-specific influential factors. These results support the organization of outsourcing-to-insourcing influential factors into the categories of Tactical, Strategic and Enabling Influences. Firm-level and case-specific results indicate that Tactical Influences have the most significant influence on the insourcing decision.

Senior executives, managers and personnel within the firm familiar with the specific insourcing case identified 5 out of 23 factors as having the most significant level of influence on a firm's decision to insource manufacturing workload. The results indicate that firms make insourcing decisions to 1) decrease costs, 2) mitigate performance consequences, 3) improve productivity, 4) address intra-firm needs for expertise, and 4) improve quality. Secondary influences on the insourcing decision include 10 influential factors classified as Strategic Influences.

Our results indicate that primary reasons for outsourcing and insourcing are the same. Firms make sourcing decisions which best position the firm to minimize cost, improve quality, and increase productivity and performance. The interviews with senior executives and managers suggest that most insourcing decisions are in response to an external trigger event (e.g., erosion of quality or cost increases). We did, however, identify examples where firms made insourcing decisions in response to changes in the

internal environment. These examples included improved processes (i.e., through lean, six sigma) or acquisition of machinery which increased the firm's production capacity.

Key differences between outsourcing and insourcing appear to be largely associated with those factors classified as Enabling Influences. Unlike outsourcing, firms did not consider the Enabling Influences to be significant in the manufacturing relocation decision. This is most likely due to the long-term focus implied by these factors.

The themes of TCE would suggest that firms facing difficulties in the market (i.e., cost increases) should rely on the governance mechanisms internal to the firm to reduce transaction costs. Our results indicate that firms will insource manufacturing functions to support achievement of near-term financial objectives. Consistent with the themes of RBV, our results indicate that firms seek to work with suppliers to decrease costs and improve quality to sustain competitive advantage before making an insourcing decision. The results of the interviews and case study analysis indicate that the themes of TCE and RBV align with and support our identification and classification of the primary influential factors. The factors classified as tactical influences are consistent with the themes of TCE and RBV, and have the most influence on a firm's outsourcing-to-insourcing manufacturing relocation decision.

## **5.9 Managerial Implications and Propositions**

Firms evaluating opportunities to reduce costs, improve quality, and increase performance or productivity measures should carefully evaluate their outsourced manufacturing portfolio. Consideration should be given to changes in the firm's needs



for new expertise or skills associated with the advancement of manufacturing technologies. Where outsourcing decisions were made to allow the firm to focus on core competencies, these decisions should be evaluated against updated internal objectives and any changes which may have occurred in the external environment. Enabling influential factors should also be examined to identify changes which may have occurred. Areas which warrant careful consideration include changes in regulatory policy, proprietary system profitability or opportunities to modify existing supplier contracts.

The results of the interviews and case studies led to the development of the following research propositions:

**5.9.1 Proposition One:** *The tactical influences of cost reduction, performance consequences, improve productivity, need for expertise and quality are very similar sources of influence for both outsourcing and insourcing of manufacturing functions.*

Tactical influential factors appear to support the firm's desire to implement manufacturing sourcing strategies which best position the firm to achieve near-term customer service, financial management, production, and resource utilization goals.

**5.9.2 Proposition Two:** *The strategic influences are most often associated with the firm's ability to develop and position resources in response to anticipated changes in internal or external conditions.*

Strategic influences—Focus on Core Competencies, Service Improvement, Supplier Market Power, Technical Advances, Global Supply Chain Risks, Outsourcing Risks, Just-in-Time Complexities, Supply Chain Infrastructure Investment, Regulatory

Change, Rapid Growth—appear to have moderate influence on the outcomes of the firm’s outsourcing-to-insourcing manufacturing relocation decisions.

**5.9.3 Proposition Three:** *The Enabling influences have very have little influence on the outcomes of the firm’s outsourcing-to-insourcing manufacturing relocation decision.*

Influential factors which support achievement of the firm’s long-term intra- and inter-firm objectives were found to require commitment of the firm’s resources beyond any immediate planning horizon. Many interview participants described the insourcing decision to be in response to a need to improve near-term outcomes and did not believe enabling influences could affectively achieve the desired outcome.

## **5.10 Research Limitations and Future Direction**

We examined the relative influence of 23 factors identified in the operations and supply chain management outsourcing literature to determine which, if any, of these same factors influence outsourcing-to-insourcing manufacturing relocation decisions. Our research results may not be generalizable across and between industries in that we worked with only 12 firms in the manufacturing and manufacturing support services sectors of the U.S. economy to complete our interviews and case study examinations. A large-scale evaluation should be completed which evaluates the 23 influential factors multiple firms within the same North American Industry Classification (NAIC). Consideration should be given to the effects of other factors such as the firm’s primary manufacturing focus (e.g., final products, subassemblies, or components), firm financial

size, duration of the outsourced manufacturing strategy, and the outsourced provider's location.

We organized the 23 influential factors into tactical, strategic and enabling categories based on the results 30 interviews with senior executives and managers. We are not aware of any literature which contains a prioritization of these influential factors. A large-scale survey, including firms outside the U.S., may provide a deeper understanding of the 23 factors. This prioritization research should be conducted for manufacturing and manufacturing support services as well as other industries.

There may also be advantages gained through research conducted with suppliers of outsourced manufacturing, production and support services. Our research was completed from the buyer's perspective and the results may not be generalizable in the buyer-supplier dyadic framework. Gaining the perspective of suppliers may add to the broader understanding of the outsourcing-to-insourcing manufacturing relocation shift.

## **6.0 Research Summary**

### **6.1 Major Research Findings**

In the sections that follow, the primary findings captured in Chapters 3-5 are discussed. The findings are presented in summary format. The individual chapter should be referenced for additional detail or supporting information.

#### **6.1.1 Chapter 3, Academic Paper #1 – Contract Duration: A Barrier or Bridge to Supplier-side Innovative Investment in Public/Private Partnerships**

In this chapter, 10 propositions relating to contract duration and supplier-side innovative investment were evaluated. Findings for each proposition are presented below.

*Proposition 1a.* Buyer's perception of the supplier's partnership motive is an important influential factor in determining the buyer-side risk position.

Finding: Not Supported

*Proposition 1b.* Supplier's perception of the buyer's partnership motive is an important influential factor in determining the supplier-side risk position.

Finding. Not Supported

These findings suggest buyers and suppliers do not consider the 'motive' of the potential relationship participant as a significant influential factor contributing to an overall risk position.

*Proposition 2a.* Buyer's perception of the supplier's relationship trust is an important influential factor in determining the buyer-side risk position.

Finding. Partially Supported

*Proposition 2b.* Supplier's perception of the buyer's relationship trust is an important influential factor in determining the supplier-side risk position.

Finding. Partially Supported

The buyer's perception of relationship trust is developed post contract award and is linked to supplier performance. Suppliers view relationship trust as an informal mechanism needed when addressing issues not specifically called out in the formal contract.

*Proposition 3a.* Buyer's perception of the supplier's capability to achieve contracted product or service performance objectives is an important influential factor in determining the buyer-side risk position.

Finding. Supported

*Proposition 3b.* Supplier's perception of the buyer's capability to achieve contracted product or service performance objectives is an important influential factor in determining the supplier-side risk position.

Finding. Supported

Many buyers expressed their belief that the proper sequence should be to accurately identify requirements then evaluate capabilities of potential suppliers. Here buyers assign risk based on the perception of the supplier's capabilities as demonstrated through past performance. Suppliers identified the accuracy of the buyer's performance

objectives as the primary influence on supplier-side risk position. Clearly stated performance objectives were found to reduce the supplier's perception of risk.

*Proposition 4a.* Buyer's responsibility for achieving intra-firm financial objectives is an important influential factor in determining the buyer-side risk position.

Finding. Supported

*Proposition 4b.* Supplier's responsibility for achieving intra-firm financial objectives is an important influential factor in determining the supplier-side risk position.

Finding. Supported

For buyers, the key focus is to ensure the best product or service is acquired which meets specific intra-firm financial objectives. This may be achieved by working closely with suppliers to reduce cost. Suppliers primarily focus on protecting or preserving the ability to meet intra-firm financial objectives through the use of detailed contracts.

*Proposition 5.* Buyer-supplier perceptions of collective risk position directly influences desired contract duration.

Finding. Supported

Both buyers and suppliers see long-term contracts as a critical foundation for addressing highly complex or uncertain supply chain characteristics. However, there are fundamental differences between buyers and suppliers concerning contract structure and contract duration. Buyers suggest contract structure is selected prior to determining

contract duration. Suppliers would prefer buyers determine the contract duration prior to selecting the contract structure. Suppliers are concerned with the ability of the contract structure to afford them the opportunity to minimize risks which may be inherently involved in shorter duration contracts. Findings suggest that suppliers perceive that longer term contracts reduce supplier side risks and may at the same time reduce buyer-side costs.

*Proposition 6.* A long-term buyer-supplier contract enables supplier-side strategic investment.

Finding. Supported

Suppliers believe shorter term contracts do not support supplier-side strategic investment. Suppliers stated that shorter term contracts do not provide the supplier the opportunities to hedge against risks and achieve the needed return on investment. Buyers stated that short-term contracts serve to expand the supplier base, increase competition and reduce buyer-side costs. In contrast, suppliers perceive short-term contracts as more expensive and as impediments to supplier-side investment which, if made, could significantly improve their ability to achieve contract performance objectives and reduce buyer-side costs over time. Findings suggest suppliers need the duration of the contract to be greater than three years, ideally five to seven years, in order to make supplier-side innovative investments.

#### **6.1.2 Chapter 4, Academic Paper #2 – Buyer Beware: Nearshoring, Reshoring and Insourcing—Moving Beyond the Total Cost of Ownership Discussion**

In this chapter, risks associated with the use of total cost of ownership (TCO) models in the evaluation of outsourcing-to-insourcing manufacturing relocation decisions are identified and examined. The literature identifies TCO as a preferred approach for evaluating nearshoring, reshoring or insourcing opportunities. However, the findings of this research suggest TCO does not address many of the engineering and supply chain complexities which have been shown to negatively affect the firm's ability to achieve its manufacturing relocation objectives.

This research describes three types of outsourced manufacturing relationships and the potential risks which would not be identified using only a TCO model in considering opportunities to relocate the outsourced manufacturing function. The manufacturing relationship types, the focal firm's degree of control or influence, and potential risks are discussed below.

*Custom Manufacturing.* The purpose of this relationship was found to be focused on having a manufacturer produce a component or end-item in accordance with the focal firm's specific product design, engineering and manufacturing specifications, and preferred manufacturing processes. In this relationship, the focal firm retains a very high degree of control or influence over the manufacturing standards or metrics, and production quality control metrics. Research findings suggest that focal firms overestimate the level of detailed knowledge they have concerning the manufacturer's processes during the manufacturing relocation decision process. There were two major



findings discovered associated with this relationship type. First, focal firms did not have an awareness of the degree to which the outsourced manufacturer had absorbed manufacturing-related costs (i.e., scrap and re-work) in order to meet the focal firm's quality and costs objectives. Second, focal firms were not aware of the degree to which their outsourced manufacturers had become reliant on the use of non-standard processes (e.g., manufacturing or production 'work-arounds') in order to minimize manufacturing costs and maximize profit.

*Customization of Standard Parts.* In this relationship the focal firm engages with a manufacturer of standardized products from which the focal firm seeks to customize one or more of the products in the manufacturer's product portfolio. While the manufacturer owns the foundational product design, engineering specifications, etc., it is the focal firm's customization of the standardized product(s) which affords the firm a limited degree of control or influence over the range of process elements. Research findings suggest the focal firm may be challenged to evaluate relocation opportunities because of limitations to the manufacturer's foundational product design, engineering and manufacturing specifications, and production processes. The findings indicate firms engaged in this type relationship who relocate outsourced manufacturing functions may face design and integration issues without access to foundational product information.

*Standardized Parts.* Here an outsourced manufacturer primarily produces standardized products which are sold under one or more brands into multiple markets. The focal firm has very little, if any, control or influence over the manufacturing and production processes. Risks in this type relationship may include the limited disclosure

by the manufacturer of the product design, manufacturing and production processes. As a result, manufacturing relocation decisions are primarily based on the availability of qualified suppliers (i.e., suitable form, fit and function) in the market and the costs to switch suppliers.

Three management approaches are provided which may improve the availability of or access to the timely, accurate and complete information needed to support evaluation of manufacturing relocation opportunities.

### **6.1.3 Chapter 5, Academic Paper #3 – An Empirical Investigation of the Manufacturing Outsourcing-to-Insourcing Antecedents**

This research stream examines the level of perceived influence 23 different factors may have on manufacturing relocation decisions. Researchers have exhaustively evaluated these factors in the context of outsourcing. However, to date, there has been no examination of these factors concerning their influence on the outsourcing-to-insourcing manufacturing relocation decision. Each of the 23 influential factors is evaluate and then organized into three categories based on the level influence senior executives and managers perceive each factor to have on manufacturing relocation decision. The 6 factors aligned with the Tactical Influences category have been identified as having the most significant influence on a firm's outsourcing-to-insourcing manufacturing relocation decision. The three categories are provided below and include a listing of those influential factors which research participants identified as meeting the defined criteria.

*Tactical Influences.* These influential factors are those closely linked to firm-level achievement of near-term customer service, financial management, production, and resource utilization goals.

Factors: Cost Reduction, Performance Consequences, Improve Productivity, Need for Expertise, and Quality

*Strategic Influences.* Factors for which the firm's managers develop and position resources in response to anticipated changes in internal or external conditions.

Factors: Focus on Core Competencies, Service Improvement, Supplier Market Power, Technical Advances, Global Supply Chain Risks, Outsourcing Risks, Just-in-Time Complexities, Supply Chain Infrastructure Investment, Regulatory Change and Rapid Growth

*Enabling Influences.* Factors which support achievement of the firm's long-term intra- or inter-firm objectives.

Factors: Leverage Supply Chain Management, Supply Chain Integration, Contract Strategy, Human Resources, Proprietary Systems Profitability, Globalization of Business, Integration of Information Technologies, and Upgrade Information Technologies.

The findings indicate that primary reasons for outsourcing and insourcing are the same. Firms make sourcing decisions which best position the firm to minimize cost, improve quality, and increase productivity and performance. The interviews with senior executives and managers suggest that most insourcing decisions are in response to an external trigger event (e.g., erosion of quality or cost increases). Key differences between outsourcing and insourcing appear to be largely associated with those factors

classified as Enabling Influences. Unlike outsourcing, firms did not consider the Enabling Influences to be significant in the manufacturing relocation decision. This is most likely due to the characteristics of the Enabling Influences factors which imply the need for longer term perspectives and potentially financial investments for the firm.

## **6.2 Implications for the United States Air Force**

This research identified several issues considered relevant the United States Air Force (USAF). As identified in Chapter 3, contract structure and duration are significant issues for suppliers. The USAF should investigate the current structure and duration of its contracts, particularly those contracts which cover outsourced manufacturing or production functions which may be considered for insourcing. The USAF may discover that the structure and duration of its contracts are inhibiting the supplier's willingness to make innovative investments which could benefit both the USAF and supplier.

In Chapter 4 total cost of ownership (TCO) was identified as an insufficient approach for evaluating current outsourced relationships and does not provide decision makers with the detailed information needed to evaluate insourcing opportunities. The USAF should identify the type of outsourced manufacturing relationship it has with its suppliers. The type of relationship may largely dictate the degree of control or influence the USAF has in the relationship and, in-turn, its access to the critical engineering and supply chain information needed to support an insourcing decision.

Chapter 5 identified the primary factors which have the highest level of influence on an insourcing decision. The USAF should ensure that the detail associated with each

of these five primary factors is fully developed and evaluated prior to engaging in an outsourcing-to-insourcing manufacturing relocation decision making process.

The framework below (Figure 15) should be used to guide relocation discussions. We found that firms who utilized vertically and horizontally integrated teams, including suppliers, were better prepared to evaluate outsourcing-to-insourcing manufacturing relocation opportunities.

<i>Evaluate contract duration and structure</i>	<i>Determine outsourced manufacturer relationship type</i>	<i>Identify factors influencing the insourcing decision</i>
Does the contract enable supplier-side innovative investment?	Does the relationship type ensure access to engineering and supply chain information?	Will insourcing the function achieve these objectives?

**Figure 15 - Relocation Evaluation Framework**

The framework in Figure 15 ties together the implications of contract duration and supplier-side investment identified Chapter 3, manufacturing process complexity factors and the focal firm-manufacturer relationship issues addressed in Chapter 4, and the need for decision makers to fully develop the influential factors influencing an insourcing decision as discussed in Chapter 5. Collectively, the framework provides decision makers and their teams with the overarching information nodes which need to be completely evaluated prior to entering into an outsourcing-to-insourcing manufacturing relocation decision.

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## Appendix A – Semi-structured Interview Guide

The following questions will be used as a framework to guide participants through the interview process. Additionally, the researcher may ask follow-on questions in order to afford participants an opportunity to provide additional information that clarifies or supports the participants' response.

**RQ1:** *How are outsourced functions managed?*

**RQ2:** *How does this management approach influence an insourcing decision?*

**RQ3:** *How does the duration of the buyer-supplier contract influence an insourcing decision?*

**RQ4:** *How do the following factors influence an insourcing decision?*

**Table 1. Influential Factors**

Factor	(Low) Influential Rating (High)					
Contract Strategy	0	1	2	3	4	5
Cost Reduction	0	1	2	3	4	5
Focus on Core Competencies	0	1	2	3	4	5
Global Supply Chain Risks	0	1	2	3	4	5
Globalization of Business	0	1	2	3	4	5
Human Resources	0	1	2	3	4	5
Improve Productivity	0	1	2	3	4	5
Integration of Information Technologies	0	1	2	3	4	5
Just-in-Time Complexities	0	1	2	3	4	5
Leverage Supply Chain Management	0	1	2	3	4	5
Need for Expertise	0	1	2	3	4	5
Outsourcing Risks	0	1	2	3	4	5
Performance Consequences	0	1	2	3	4	5
Proprietary Systems Profitability	0	1	2	3	4	5
Quality	0	1	2	3	4	5
Rapid Growth	0	1	2	3	4	5
Regulatory Change	0	1	2	3	4	5
Service Improvement	0	1	2	3	4	5
Supplier Market Power	0	1	2	3	4	5
Supply Chain Infrastructure Investment	0	1	2	3	4	5
Supply Chain Integration	0	1	2	3	4	5
Technical Advances	0	1	2	3	4	5
Upgrade Information Technology	0	1	2	3	4	5
Other:	0	1	2	3	4	5
Other:	0	1	2	3	4	5

**RQ5:** *How are insourcing decisions made?*

**RQ6:** *How are insourcing decisions implemented?*

**RQ7:** *How does implementing an insourcing decision impact management operations?*

**RQ8:** *How have strategic business objectives, purchasing strategies or infrastructure investment plans changed as a result of implementing an insourcing decision?*

**RQ9:** *How is the success of an insourcing decision measured?*

**RQ10:** *How does insourcing affect key Supply Base Performance Factors?*

**Table 2: Insourcing Affects**

Factor	Expected Improvement	Baseline Defined	Target Defined	Current Status	Overall Expected % Improvement	Time to Achieve Expected Improvement
Availability or Capacity	Yes / No	Yes / No	Yes / No	> / < / =	%	
Communication and Information Sharing	Yes / No	Yes / No	Yes / No	> / < / =	%	
Delivery and Transportation	Yes / No	Yes / No	Yes / No	> / < / =	%	
Dependability	Yes / No	Yes / No	Yes / No	> / < / =	%	
Flexibility	Yes / No	Yes / No	Yes / No	> / < / =	%	
Inventory	Yes / No	Yes / No	Yes / No	> / < / =	%	
Quality	Yes / No	Yes / No	Yes / No	> / < / =	%	
Risk or Uncertainty	Yes / No	Yes / No	Yes / No	> / < / =	%	
Service or Responsiveness	Yes / No	Yes / No	Yes / No	> / < / =	%	
Technology and Innovation	Yes / No	Yes / No	Yes / No	> / < / =	%	
Time or Speed	Yes / No	Yes / No	Yes / No	> / < / =	%	
Unit Price	Yes / No	Yes / No	Yes / No	> / < / =	%	
Management Costs	Yes / No	Yes / No	Yes / No	> / < / =	%	
Supply Chain Complexity	Yes / No	Yes / No	Yes / No	> / < / =	%	
Other:	Yes / No	Yes / No	Yes / No	> / < / =	%	
Other:	Yes / No	Yes / No	Yes / No	> / < / =	%	
Other:	Yes / No	Yes / No	Yes / No	> / < / =	%	



## Appendix B – Case Study Worksheet

AFIT Ph.D. Dissertation Research: Case Study Worksheet									
1. Company Name:									
2. Insourcing Case Description									
Final Product		Subassembly		Component		Service			
2a. How long had the Product / Service been outsourced?									
<1 yr		1-3 yrs		3-5 yrs		5-10 yrs		>10 yrs	
2b. Where was the outsourced Product / Service supplier located?									
Locally		Regionally		Outside of Region					
(within 90 miles)		(within same region)		(within US)					
Outside CONUS									
Canada	Mexico	Europe	Pacific Rim	Other					
2c. How was this outsourced Product / Service managed? Please describe.									
Not Managed			Informally Managed			Formally Managed			
3. re: RQ4--What factor(s) predominantly influenced the insourcing decision?									
4. re: RQ5--how was the insourcing decision made? Please describe.									
Formal Process / Approach					Informal Process / Approach				
5. re: RQ6--how was the insourcing decision implemented? Please describe.									
6. re: RQ9--how was the success of the insourcing decision measured? Please describe.									
7. Please address any managerial implications revealed as a result of this insourcing case.									
8. Please address any 'lessons learned' as a result of this insourcing case.									

## **Appendix C – Curriculum Vita**

### **Education**

Ph.D. Air Force Institute of Technology (June, 2013)

School of Engineering and Management

Department of Operational Sciences

Major: Logistics      Minors: Systems Engineering and Statistics

Institute for Supply Management (ISM) Scholar

Center for Advanced Purchasing Studies (CAPS) Scholar

International Federation of Purchasing and Supply Management (IFPSM) Scholar

Dissertation: “The Outsourcing-to-Insourcing Relocation Shift: A Response of U.S. Manufacturers to the Outsourcing Paradigm.” Advisor: J. A. Ogden.

M.A. University of Dayton (1998)

Major: International Affairs

M.S. Air Force Institute of Technology (1997)

Major: Acquisition and Logistics Management

Thesis: “International Armaments Cooperation in the Post Cold-war Era.”

Advisor: C. M. Brandt

United States Air Force Historical Foundation Outstanding Thesis Award

Sigma Iota Epsilon

B.S. University of Maryland (1990)

Major: Business Management

### **Research and Teaching Interests**

Global Supply Chain Operations, Outsourcing to Insourcing Complexities, Re-shoring

Manufacturing Supply Chains, Supply Chain Analytics, IT-enabled Supply Chains, Supply

Financial Analysis, Production and Operations Scheduling, Supply Chain Contracts, Performance

Based Logistics, Strategic Supplier Development, Organizational Strategy, Logistics and Supply

Chain Workforce Development.

### **Publications**

Rubino, D. P., J. A. Ogden and P. L. Hartman (2013), "Insourcing within the U.S. Department of Defense: Critical Success Factors Impacting the Purchasing Function and Public/Private Partnerships," submitted as a full paper for presentation and publication in the proceedings at the 23<sup>rd</sup> *Annual North American Research and Teaching Symposium*, Arizona, March 2013.

Hartman, P. L. and J. A. Ogden (2012), "Contract Duration: A Barrier or Bridge to Supplier-side Investment in Public / Private Partnerships," Under Review at *Journal of Business Logistics*.

Hartman, P. L. and J. A. Ogden (2012), "The Insourcing Cycle Shift: Applying the Triple Helix Model to Analyze the Effects of Multi-dimensional Influential Factors on the Purchasing Function," 22<sup>nd</sup> *Annual North American Research Symposium*, Arizona, March 2012, pp 487-503.

Hartman, P. L. (2011), "The Insourcing Cycle Shift: Applying the Triple Helix Model to Analyze the Effects of Multi-dimensional Influential Factors on the Purchasing Function," 16<sup>th</sup> *Annual International Federation of Purchasing and Supply Management Summer School*, Austria, June 2011, pp 1-18.

Sprague, T. M., J. A. Ogden, and P. L. Hartman (2011), "Achieving Enterprise Resource Planning (ERP) Success Through Focused End-user Education and Training Strategies," 21<sup>st</sup> *Annual North American Research Symposium*, California, March 2011, pp 1-30.

Hartman, P. L. (2007), "Expeditionary Combat Support System (ECSS) Change Management," *Air Force Journal of Logistics*, Vol. XXXI, No. 2, pp 24-27.

Hartman, P. L. and C. M. Brandt (1998), "International Armaments Cooperation in the 1990s: MEADS and JSF," *The Defense Institute of Security Assistance Management Journal*, Winter, pp 105-116.

Hartman, P. L. and C. M. Brandt (1998), "International Armaments Cooperation: Can It Fulfill Its Promise?" *Air Force Journal of Logistics*, Vol. XXII, No. 3, pp 11-15.

### **Teaching**

(2013) Bowling Green State University, MBA Program (MBA 6040). 2-day lecture on the evolutionary cycle of manufacturing in the United States.

(2012) Bowling Green State University, MBA Program (MBA 6040). Selected by Dr G. A. Zsidisin, Associate Professor and co-editor of the *Journal of Purchasing and Supply Management*, to present “Global Supply Chain Operations” and “Contract Negotiations in a Global Supply Chain Environment”.

(2011) Air Force Institute of Technology, M.S. Program, Logistics Information Systems (LOGM 615). Selected to chair panel discussions with technical and functional experts addressing utilization of commercial-off-the-shelf (COTS) software such as SAP, Oracle, Servigistics and UGS Team Center.

(2011) Air Force Institute of Technology, M.S. Program, Production Operations Management (LOGM 636). Selected to present a lecture on “Managing Quality in the Production Environment”.

(2010) Air Force Institute of Technology, Executive Education. Selected to discuss Oracle Enterprise Resource Planning (ERP) software suites. Issues addressed included package enabled process redesign (PEPR); data standards; extraction, transformation and loading (ETL) of data; legacy system cutover and deconstruction; transaction traceability; supply visibility; financial management; and end-user training.

(2000) University of Maryland, Asia-Pacific Division, Adjunct Professor, B.S. Program, Introduction to Business Management (BMGT 110). Responsibilities included lecture development; facilitation of group exercises; test development, administration and grading; and student performance evaluation.

### **Service:**

Journal Referee:

- a. *Journal of Business Logistics*
- b. *Journal of Purchasing and Supply Management*

Membership:

- a. Council of Supply Chain Management Professionals (CSCMP)
- b. Institute for Supply Management (ISM)
- c. International Federation of Purchasing and Supply Management (IFPSM)
- d. Association for Manufacturing Excellence (AME)

## Appendix D – Publication of Research

The following are the expected publications to be produced from this dissertation research and the target journal.

1. Hartman, P. L. and J. A. Ogden (2013), “Contract Duration: A Barrier or Bridge to Supplier-side Investment in Public/Private Partnerships.”

Target Journal: Under review at the *Journal of Business Logistics*.

2. Hartman, P. L., J. A. Ogden, J. R. Wirthlin and J. O. Miller (2013), “Buyer Beware—Nearshoring, Reshoring and Insourcing, Moving Beyond the Total Cost of Ownership Discussion.”

Target Journal: *MIT Sloan Management Review*. Summer 2013.

3. Hartman, P. L., J. A. Ogden, J. O. Miller and J. R. Wirthlin (2013), “An Empirical Investigation of the Manufacturing Outsourcing-to-Insourcing Antecedents.”

Target Journal: *Journal of Operations Management*. Summer 2013.

Additional publication opportunities are also expected based on the volume of information obtained through the interview and case study process using the semi-structured interview guide (Appendix B) and case study worksheet (Appendix C).

<b>REPORT DOCUMENTATION PAGE</b>			Form Approved OMB No. 0704-0188	
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1. REPORT DATE (DD-MM-YYYY) 13-06-2013		2. REPORT TYPE Dissertation		3. DATES COVERED (From — To) 11 May 2010 – 13 June 2013
4. TITLE AND SUBTITLE The Outsourcing-to-Insourcing Relocation Shift: A Response of U.S. Manufacturers to the Outsourcing Paradigm		5a. CONTRACT NUMBER		
		5b. GRANT NUMBER		
		5c. PROGRAM ELEMENT NUMBER		
6. AUTHOR(S)  Hartman, Paul L.		5d. PROJECT NUMBER 13S168A		
		5e. TASK NUMBER		
		5f. WORK UNIT NUMBER		
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Air Force Institute of Technology Graduate School of Engineering and Management (AFIT/ENY) 2950 Hobson Way WPAFB OH 45433-7765		8. PERFORMING ORGANIZATION REPORT NUMBER  AFIT-ENS-DS-13-J-18		
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) Mr. M. Scott Reynolds, SES Deputy Assistant Secretary of the Air Force for Logistics USAF Pentagon 20330-1665 (703) 693-2185 scott.reynolds@pentagon.af.mil		10. SPONSOR/MONITOR'S ACRONYM(S) SAF/IL		
		11. SPONSOR/MONITOR'S REPORT NUMBER(S)		
12. DISTRIBUTION / AVAILABILITY STATEMENT APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED				
13. SUPPLEMENTARY NOTES				
14. ABSTRACT Outsourcing has been utilized as a corporate strategy by U.S. manufacturers for over three decades to minimize manufacturing and production costs, focus on core competencies and achieve sustained competitive advantages in the global market. In recent years, manufacturers have begun evaluating nearshoring, reshoring and insourcing strategies as near-term responses to trigger events such as increased labor costs and decreased product quality. The United States Air Force also established outsourcing as its primary strategy for achieving cost-saving objectives associated with the design, engineering, manufacturing, production and sustainment of its fourth, fifth and sixth generation weapon systems. In order to decrease weapon system costs and consistently achieve congressionally mandated core and 50/50 requirements, the United States Air Force is evaluating opportunities to bring outsourced workload into the depot infrastructure. This research applies grounded theory and case study methodologies to examine the antecedents and barriers of the U.S. manufacturing outsourcing-to-insourcing relocation shift. A structured framework is presented to assist the United States Air Force as a guide for evaluating insourcing opportunities. The framework addresses contract duration, access to critical information, and the factors influencing the insourcing decision.				
15. SUBJECT TERMS Outsourcing, Insourcing, Manufacturing Relocation, Public/Private Partnerships				
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT  UU	18. NUMBER OF PAGES  182
a. REPORT  U	b. ABSTRACT  U	c. THIS PAGE  U		
			19a. NAME OF RESPONSIBLE PERSON Dr. Jeffrey A. Ogden (ENS)	
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